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Rev. 07/10/02

NL/TARACORP SUPERFUND SITE GRANITE CITY, ILLINOIS

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Prepared for

U.S. Department of the Army Corps of Engineers, Omaha District Omaha, Nebraska

March, 1993



Woodward-Clyde Consultants 2318 Millpark Drive St. Louis, Missouri 83043

WCC Project No. 89MC114V

DATE 11-4-91

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CONTRACT NO 0021	HUMIOTY		X		<u></u>
SUB-CONTRACTORS ON SITE:		· · · · · · · ·			
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BY WENDY REDIBOLT TITE STATE BUG

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PROJECT NE/19/2 COCP JOB NO. 89 Melly	HUMIOTY OY WOOM HUND 1-	}
CONTRACT NO OO 2 1		
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CMCRROWS	EXPECTATIONS Maple	 	
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	Sangle Sound Street	X.R.	
			

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	Sample Maple St F-1	to Obre St	<u>-</u>
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BY Kindledon TITE Staff Scientist

DATE 11/5/91 A-E DAILY QUALITY WEATHER BOOK CONTROL REPORT 70-45 45 40 PROJECT MANGER TERRY BUCKHOLTZ JOB NO. 89 MC 114 V 2-2 HUMIDITY CONTRACT NO. SUB-CONTRACTORS ON SITE: WOODWARD-CLYDE CONSULTANTS HAB TEAM 2 ECUIPMENT ON SITE. HAB KIT WORK PERFORMED (INCLUDING SAMPLING): JAMPLEN 11.43 MADLE, HOWY MADE, 1648 MODIE, 1601 OLEVE, 1625 DLIVE, MID 1629 NITVE 6 3 mass sach would (norm to Semples) Toman LEON SAMOING PRICEDURES TAN SOFI SAMPLE LARELDIA IAN SOP 5 BREAK ABONDONMENT DOWN SUP 7 SAMPLED 1647 MEAS 9 SAMPLES TOTAL LEGO DELON PROCEDURES TOUSOF L SAMPLENG PROCEDULES TOW SOP ! SAMPLENE LARGE DUE DEN SIN 5 BURNE RE ONDON MENT IAN SOFT

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QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)		
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VISITED STE		
CMCRROWS EXPECTATIONS:	44A 671	was .
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BY Robert TITE STORE DUG

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BY 2 Slede TIME Staff Scientist

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A-E DAILY QUALITY						
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PROJECT MANGER TORLY BYCKNOWN	WINO	9:1	×	НФП	3	01 NO.
108 NO. 89 MC 114 V	HUMIDAY	Oy	View Control	ry X	2	3
CONTRACT NO						
SUB-CONTRACTORS ON SITE:						
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EQUIPMENT ON SITE.						
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WORK PERFORMED (INCLUDING SAMPLING):						
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* TOTAL 30000 IS ST 51.						
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QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	
	
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PECIAL NOTES.	
CMORROWS EXPECTATIONS:	
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1743 CHESTNUT)	

BY Waly E Rabolt

TITLE STORE ENG

	DATE 11-7-91
	OAY S M I W W S
A-E DAILY QUALITY CONTROL REPORT	WEATHER Sun Cher Overcast Ram Show
DE PROJECT HANGER TERRY BYCHOLTZ ROJECT NH/ TARA CORP DE NO. 89 MC 114V	TEMP Te 32 32-50 50-70 70-45 45 40 WIND SSE MOORE HOT RECONNO. HUMIOTTY ON MOORE HUMIOT 44 - /
ONTRACT NO 0021	
SUB-CONTRACTORS ON SITE: WOOD WARD -CLYDE CONSULT	MUTS HAR TURAM # 1.
WOOD WARD -CLADE (COSSEL)	HD)) 146B / L
CUIPMENT ON SITE.	
HAB KIT	
YORK PERFORMED (INCLUDING SAMPLING):	S 1/2/ 1/34 SPRUCE
SAMPLED 1648 , 163	8, 1626, 1634 SPRUCE
STREET. 24 SAMPLES FOR TO	TAL LEAD.
SAMPLES TAKEN IAU	SOP # 1 .
ABANDONED BOOMES IN	SW SOP #7.
FOUIPTMENT AND PER	SONNYL
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	SHEET 1 OF 2

MAL / TARPCORP	REPORT NO 4-1
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QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	
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HEALTH AND SAFETY LEVELS AND ACTIVITIES.	
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PERSONNEL AND EQUIPTMENT	DECON
	
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PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	
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LOCATING OF BORING SITUS.	
SPECIAL NOTES.	
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CMCRROWS EXPECTATIONS: SAMPLE SPRUCE 17 AND OLIVE 1719	1720 1721
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BY Made Mallere TITE FIELD TECHNICIAN

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(SAMPLE FORMAT)

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A-E DAILY QUALITY					XI	
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CONTRACT NO 0021		!			L	
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1718 OHESTIVAT						
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PECIAL CMCAR	NOTES. OWS EXPECTATIONS MESTINIT (1750)	LESSENCI	1747) mp NB	

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A-E DAILY QUALITY CONTROL REPORT	WEATHER	Bright Sun	X	0	Ren	Snow
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PROJECT NL /Taracorp	W !NO	S24	7	нфп		n NO.
JOB NO	HUMIOTTY	Ογ	X	Humo	5)
SUB-CONTRACTORS ON SITE:						
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- Meeting between HAB team		0	<i>(</i>	held	<u> </u>	
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PROBLEMS ENCOUNTEREDICORRECTION ACTION TAKEN: Ex time Cold temperatures in morning (below 25°F) prevented sampling. Weelly maintenance & cleaning of equipment & valuely was performed & HAB crews want home early.
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equipment & vehicle was performed & HAB crews went homesarty.
SPECIAL NOTES.
TCMCRROWS EXPECTATIONS: 1 SPRINGE 1732, 1744, 1754; Olive 1719, 1720;
///C/n C/ 6AA
1721 (Reland 1642 HAB Dam #2 CHESTAUT: 1750, 1743, 1723, 1747;
1717 1721
Neidering hour 821,001, WALLEY

BY Strang Hagney TITE Servin Stoff Engineer

Figure 2 (Continued)

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A-E DAILY QUALITY	l	<u> </u>			
CONTROL REPORT	WEATHER	Sun X			no
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PROJECT MANGER TORY BUCHNOLE	wev0	24 HOOM	P Ģ ī	F-con F	₩.
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CONTRACT NO 00 21	L	I X		<u></u>	
SUB-CONTRACTORS ON SITE:					
WOODWARD - CLYDE CONSULTANTS	UB TE	am # 2			
ECUIPMENT ON SITE.					
HAB KIT					
WORK PERFORMED (INCLUDING SAMPLING):					
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- 5 LEM IDATE		•			
· 1723 CHESTNUT					
"also HAD. 3 LOOD PURITURE	SAMPLES	BOCH			_
- 3 (ED) QA SON	ASS ENCH				
* 7072 SAMPLES = 78					ᅱ
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CICCT	NL/MRACORP	я долгио <u>6-2</u>
	89MC 114V	OUTE 11/11/91
	CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	
JALITY	CONTROC XCTIVITIES (INCODERING COOR)	
		
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	CONTRACTOR ACTRACTORS	
ALTH A	NO SAFETY LEVELS AND ACTIVITIES.	
Mo	meren Love "n" pennemal	
	CONTAKEN:	
OBLEN	IS ENCOUNTERED/CORRECTION ACTION TAKEN:	·
	9.5	
ECIAL	NOTES.	
	7.045	
MCRA	OWS EXPECTATIONS ADMS (1930, 1938, 1942) AND BANNOW (19	947 1939, 1937, 1930, 1928)
	ADAMS (1930, 1938, 1942) AND BERRY	

	DATE		11-	1-71		 .
	CAY	S,	<u> </u>	~	TH P	S
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Bright Sun	Com	X	Amr	Snow
COE PROJECT HANGER TEXT BUCKOHZ	TEMP	To 32	12.50	क्रक	70-45	مه که
PROJECT WANGER TENCH 15 VEROTTE	W#40	S11	100g	нол	Go.	X1 NO.
JOB NO	HULLIOTTY	Ογ	7	HUTTE	4	芸
CONTRACT NO 00 2 1						
SUB-CONTRACTORS ON SITE:	ultents	HA	teo	~1		
COLUMNICATION COTT						
EQUIPMENT ON SITE.						•
WORK PERFORMED (INCLUDING SAMPLING):						722
Supred Olive 1719	1720 1	13)	7, 7	3640		712
1754 1744 Maple 161	or Charac	1000	167			
Dean Demont E	the sol	-12-10				
Abardened believe It	3 Sap #	η,				
Sapled IAW Sop #1	<u> </u>					
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PROJECT.	VL/Toracore	REPORT NO	6-1
.ON 8CL	57MC114V	OUTE	11-11-91
QUALITY CONTROL AC	TIVITIES (INCLUDING FIELD CALIBRATIONS)		
			
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	<u> </u>		~•
HEALTH AND SAFETY LE	Mad Sand tere		·
	Personnel & Equipme	t decomed	
•			
			
POR SUS SUS OF THE	EO/CORRECTION ACTION TAKEN:		
HOBEEMS ENCOUNTER	EUCORRECTION ACTION TAKEN	•	
	n i di Masser		

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PECIAL NOTES.			
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MORROWS EXPECTAT	IONS:		
	S-ole Delma	-1703 1704	17.7
	1643	1 1644, 1717	1728)
	Cheve land - 1	404 17,8 17	1'0

BY You line staff scentist

	OATE 11-12-71
	DAY S W W TH F S
A-E DAILY QUALITY	
CONTROL REPORT	WEATHER BOTE Cher Owner Ram Show
CONTINUE HEL GITT	
COE PROJECT HUNGER Terry Bucholtz	TEMP To 12 27:50 50-70 70-45 45 40
	WIND SEE MOREN HOT RECOT NO.
Gra Marinil	HUMIOTTY OY MOON HATES 77-2
CONTRACT NO ODA	HOMIUTY 1
SUB-CONTRACTORS ON SITE: Woodward-Chydlen Car	culton's HAB Toon 7
Wood word - Children Car	1900
EQUIPMENT ON SITE.	
HAO Kit.	
WORK PERFORMED (INCLUDING SAMPLING):	
San 21a de 1704 11	708 1710 Clareland Dolmer
).
	IAW 50/46
1 1 0	Aw SOLAT
Sandel Jan Jan	#1
(10 SAMPLES FOR	TOTAL LITED
) 2 Semples Fox	
OA SAMPLIS TAKUN FROM C	1208 1708 , 471 CAN
JAMPEES JAKES	DELMAR 1728, 1704, 1643
	·
	SHEET

2 000				(Communition Sheet)
MOUETT NO	-1 Taxage	AEO	AT NO	7-1
PRIMECT	31 MC114V		OUTE	11-12-71
OUALITY CONTROL ACTIVITIE	S (INCLUDING FIELD CALIB	RATIONSI		
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HEALTH AND SAFETY LEVELS	fiel keed.			
P	fiel kiel.	A Lacence	2	
F 3/3	STET TOTAL			
	Fig. 1			
PROBLEMS ENCOUNTEREDA	ORRECTION ACTION TAKEN	l:		
				'
SPECIAL NOTES.				
TCMCRROWS EXPECTATION	Sample PE	LMAR 1747		
	· ED	150N 1704	1709 17	5
<u>·</u>	CL	ALD 22	15	- 21 0 25
		TON 2248	2262 2	254 258
· · · · · · · · · · · · · · · · · · ·	-71 alian p	2123	•	

BY Staff Scatist

DATE 11/12/91

	CAY	S	<u> </u>	. ~	THI	5
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Bren	Char	<u> </u>	Ren	Sow
CONTROL HER SILL		Sun	1	X TO TO	70-es	100.0
COE PROJECT MANGER TELLY BUCKHOLTZ	TEMP	To 32	X X	50-70		21 NO.
PROJECT 89 MC 1/4 V	W840	X	Moder	HQT	1	
DOB NO. NETTHERCORP	HUMIOTTY	Ογ	Moder	X	1	-2
CONTRACT NO 0021	<u></u>					
SUB-CONTRACTORS ON SITE:		7767		- 2	-	
WOODWARD - CLYDE CONSULTE	WIS PIRE					
EQUIPMENT ON SITE.						
HAB KIT						
WORK PERFORMED (INCLUDING SAMPLING):						
	•					
SAMPLED	//3 B & 770 A	, 14	39 A	DUTUN	/,	
1937 BONTON, 1942 DOMS, 1938 ADAMS, AND 1930 DOMS						
· Le Samous LOSA (TOTAL	Smilles	- 48)			
<i>a.</i> 5/						
· 1928 BONTON, 1943 BONTON,	1938 ADAM	<u> </u>				
· 3 SAMPLES LEND QA (1	mon 9 SAM	PL F	<u>}) </u>			
" ALL SAME OF THESE TOWN SOR	<u>/</u>					
" ALL DESTRUCTION SOR (e	5	•				
ALL GREATHE AS ANDON MENT	1300 7 300 7					
ALL PREING MANUELLE						
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	DEP	REPORT NO. $\frac{7-2}{}$
208 NO 89 MC 1/4V		OUTE 11/12/91
CUALITY CONTROL ACTIVI	TIES (INCLUDING FIELD CALIBRATIONS)	
	1 m	
HEALTH AND SAFETY LEVEL	S AND ACTIVITIES.	
MOODER LEVEL		
	5 m	
	A Maria	
	Place 1.1	
	What.	
PROBLEMS ENCOUNTERED	CORRECTION ACTION TAKEN:	
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	5 S	
PECIAL NOTES.		
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MCRROWS EXPECTATION	S	
(1927 1911 1918	BANTUN , 2034 ADAMS	(1818 and (1919.
1930 1934 1938)	NIEDGENEURUS (1255)	

BY Windy Parket! TITE STORE ONG

A-E DAILY QUALITY	
A-E DAILY QUALITY	H F S
A-E DAILY QUALITY	
CONTROL REPORT	Ren Snow
CONTROL REPORT	
Outo Ostal E of Junio	70-45 45 00
COE PROJECT WANGER TEREY BUCKHOLZ PROJECT S9 MC 1144	Report No.
JOB NO. NL/TARACORP HUMIOTY OT WOOD HUMIOTY	8-2
CONTRACT NO OD 21	
SUB-CONTRACTORS ON SITE:	
WOODWARD - CLYDE CONSULTANTS THE WAR THAM 2	
WOODS FRED - ET YOU CANSING THAT	
EQUIPMENT ON SITE.	
HAB KIT	
WORK PERFORMED (INCLUDING SAMPLING):	
· SAMPLED	
· 1911 BONTON, 1918 BONTON, 1927 BONTON, 2034	<u> </u>
ADAMS, 1938 CLEVELAND, 1934 CI 5/5/AND, 1930	
CLEVELAND 1919 CLEVELAND AND 1255 NEEDERS	NO HAV
· C SAMPLES TOTAL LEAD EACH (TOTAL 54)	NO HAIS
· C SAMPLES TOPE LEAD EACH (TOTAL 54)	NEHHIS
· LEVELAND OND 1255 NEEDERTNAMUS	N6//#//S
· LEVELAND AND 1255 NTEDERTNAMUS · 3 SAMPLES (DA (TOTAL G)	Neways
· LESAMPLES TOTAL FACE EACH (TOTAL 54) · 1930 (LEVELAND AND 1255 NIEDERTNGHAUS · 3 SAMPLES (DA (TOTAL 6) · ALL SAMPLITUG WAS DONE SAW SOF)	NS // #/\S
· (SAMPLES TOTAL) FAN EBCH (TOTAL 54) · 1930 (LEYELAND AND 1255 NTEDERTNGHAUS · 3 SAMPLES () A (TOTAL (6) · ALL SAMPLING WAS DONE FAW SDP) · ALL SAMPLE LARD THE WAS DONE TAW SDP 5	N6//#US
· (SAMPLES TOTAL) FAN EBCH (TOTAL 54) · 1930 (LEYELAND AND 1255 NTEDEDTNIGHMS · 3 SAMPLES (DA (TOTAL (a)) · ALL SAMPLEDIG WAS DONE FAW SDP 1 · ALL SAMPLE LABOR THE WAS DONE FAW SDP 5 · ALL DECOMPRES ODAY FAW SDP 6	N6//#US
· 1930 (I EYELAND AND 1255 NTEDERTNGHAUS · 3 SAMPLES (DA (TOTAL (6)) · ALL SAMPLEDIG WAS DONE DAW SOP) · AL, SAMPLE LABOR DUE WAS DONE DAW SOP 5	NS // 4/15
· 1930 (I EYELAND AND 1255 NTEDERTNEHMS · 3 SAMPLES (DA (TOTAL (a)) · ALL SAMPLED WAS DONE SAW SOP! · AL SAMPLE LASS THE WAS DONE TAW SOP 5 · AL DECOMMENS ODAY DAY SOP'S	
· 1930 (I EYELAND AND 1255 NTEDERTNEHMS · 3 SAMPLES (DA (TOTAL (a)) · ALL SAMPLED WAS DONE SAW SOP! · AL SAMPLE LASS THE WAS DONE TAW SOP 5 · AL DECOMMENS ODAY DAY SOP'S	
· (SAMPLES TOTAL) FAN EBCH (TOTAL 54) · 1930 (LEYELAND AND 1255 NTEDEDTNIGHMS · 3 SAMPLES (DA (TOTAL (a)) · ALL SAMPLEDIG WAS DONE FAW SDP 1 · ALL SAMPLE LABOR THE WAS DONE FAW SDP 5 · ALL DECOMPRES ODAY FAW SDP 6	
· (SAMPLES TOTAL) FAN EBCH (TOTAL 54) · 1930 (LEYELAND AND 1255 NTEDEDTNIGHMS · 3 SAMPLES (DA (TOTAL (a)) · ALL SAMPLEDIG WAS DONE FAW SDP 1 · ALL SAMPLE LABOR THE WAS DONE FAW SDP 5 · ALL DECOMPRES ODAY FAW SDP 6	
· 1930 (I EYELAND AND 1255 NTEDERTNEHMS · 3 SAMPLES (DA (TOTAL (a)) · ALL SAMPLED WAS DONE SAW SOP! · AL SAMPLE LASS THE WAS DONE TAW SOP 5 · AL DECOMMENS ODAY DAY SOP'S	
· (SAMPLES TOTAL) FAN EBCH (TOTAL 54) · 1930 (LEYELAND AND 1255 NTEDEDTNIGHMS · 3 SAMPLES (DA (TOTAL (a)) · ALL SAMPLEDIG WAS DONE FAW SDP 1 · ALL SAMPLE LABOR THE WAS DONE FAW SDP 5 · ALL DECOMPRES ODAY FAW SDP 6	
· (SAMPLES TOTAL) FAN EBCH (TOTAL 54) · 1930 (LEYELAND AND 1255 NTEDEDTNIGHMS · 3 SAMPLES (DA (TOTAL (a)) · ALL SAMPLEDIG WAS DONE FAW SDP 1 · ALL SAMPLE LABOR THE WAS DONE FAW SDP 5 · ALL DECOMPRES ODAY FAW SDP 6	
· (SAMPLES TOTAL) FAN EBCH (TOTAL 54) · 1930 (LEYELAND AND 1255 NTEDEDTNIGHMS · 3 SAMPLES (DA (TOTAL (a)) · ALL SAMPLEDIG WAS DONE FAW SDP 1 · ALL SAMPLE LABOR THE WAS DONE FAW SDP 5 · ALL DECOMPRES ODAY FAW SDP 6	

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	Continuation Sheet
THET NU TORRACORP	_{пестт} ю <u>8-2</u>
310 89MC114V	OUTE 11/13/91
NO XYMCHAY	
JALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	
EALTH AND SAFETY LEVELS AND ACTIVITIES.	
MOOTPIED LEVEL "A" PENTECTION	
ROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	
PECIAL NOTES	
DMCAROWS EXPECTATIONS	-\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
CLEVEZAND (2027, 2029, 2032, 205)	5) 7 MPS MINING
(2027 2033 2038 2040)	

	DATE	
•	OAY S W TH ?	S
A-E DAILY QUALITY CONTROL REPORT	WEATHER BIOTE COM OVERTER REIN	Snow
COE PROJECT MANGER Tera, Buchalte	WNO ST TO	ori NO.
PROJECT NL TENER PROJECT NL TENER PROJECT NO 89 MC 1141 V	HUMIDUA DA MARA HALLA 8-	•
SUB-CONTRACTORS ON SITE:		1
Woodward-Chiple C	ensultants HAB Teen	<u></u>
EQUIPMENT ON SITE.	· · · · · · · · · · · · · · · · · · ·	
HABIKIT		
and a man and the state of the		
WORK PERFORMED (INCLUDING SAMPLING):	dison, 1709 \$ 1715 Ec	إصدا
01 1 1 0 0 0 0 15 Pentro 3254 2	1358 (2157, 2123-Total-	48
Delma 1747 - orly are bacing	- 33mply 230	
Benton 2248 - 11 3 11 0	- 9 sayles " " Total lead	Les
2asa 'I //	3 " // 7524	
	- (0. 0	
Total scopes for QA.	dress 1104	
	eveled exis	
Decorred comment of p	ersonal IAW Sop#6.	
Adonbord Joseph	AN SOR #7.	
5 moles Ish	500#1	
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non iert	NL/Torscorp		8-1
~ NEU	89MC114V	OLE_	11-13-71
38.00.700	OL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)		
CUALITY CONTAC	X XC HATTLES TINGEBOUNG WEST		
	man distribution and the second secon		
	1 14		
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HEALTH AND SAF	ETY LEVELS AND ACTIVITIES.		
	Modified lave D	1000	
	Modified Lave D Personel : Egypnet	acu,	
	OUNTERED/CORRECTION ACTION TAKEN:		
PROBLEMS ENCO	UNTEREOCORRECTION		
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	- The Late -		
			· ·
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SPECIAL NOTES.			
TCMCRROWS EX	- Oc Kestes d	131,2131,21	33 2148 2157
	2158 2278 230 2337	Madison	1017 2-as,
	GC-1918.	<u> </u>	
	<u> </u>		

BY Xxx State Scionist

	DATE		_1 _	14-91		
· · · · · · · · · · · · · · · · · · ·	DAY	S	<u> </u>	~	X	S
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Bright Sun	Char	×	Ren	Snow
TOE PROJECT HANGER Terra Buch att =	TEMP	To 32	72·20	50-70	70-45	1500
PROJECT WANGER	WNO	Sai	×	Мфп	Reco	on NO.
08 NO. 87MC114V	HUMIDULA	Oy	Week	Huma		
ONTRACT NO 0022		<u>`</u>	_/			
SUB-CONTRACTORS ON SITE:			1 -		7	
Woodwed-Chyde Cons.	والمراء		47-	eans		
EQUIPMENT ON SITE.						
HAY LA						
YORK PERFORMED (INCLUDING SAMPLING):						
40 Godon - 2228	r	0	32:	32, a	158	,
2157 Grad 33,2/21,2/3	1,					
	·					
Gmd 1918:						
Med:son 2017, 2023.						
Total # for lead - 66.						
Decoral en mont	EAU	-20	~# (e			
Al April become	FAW	30	4	7.		
Japled EARL	Say #1	Υ				
	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	•				
BA super Total # 4.		<u>. ·</u>				
Benton 2121, 2131						
Control of the Contro						
			SH	EET	<u>ع</u> عن _	X

	A / 1		Communion Sheet
PROJECT.	NLITARIAP	REPORT NO	
ON BOL	NL/Taracap 89 MCH4V	CATE	11-14-91
OUALITY CONTROL	ACTIVITIES (INCLUDING FIELD CALIBRATIONS)		
· ·			·
	•		
HEALTH MO SAFETY	LEVELS AND ACTIVITIES.		
	Modified care 1 D		
	Permel & Eppen	t de conet	4
			
			
PROBLEMS ENCOUNT	ERED/CORRECTION ACTION TAKEN:	•	
TOBECAS ENCOUNT	ENECOGONIZOTO CONTROL	•	
			
·			
PECIAL NOTES.			
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·			
CMCRROWS EXPECTA	ATIONS:		
	Sample Adons St	- 210R, 216	<u> </u>
	2:34, 2138, 2144, 213	. 2108,216 53.	,

BY 560 Plas TITE Staff Scientist

A-E DAILY QUALITY
CONTROL REPORT

COE PROJECT MANGER TERM BUCHDUTS

PROJECT NL/TAPACORP

JOB NO. 89 MC 1/4 V

CONTRACT NO. 0021

DATE 11/14/91					
OAY	5	<u> </u>	" ,	7	S
WEATHER	Bright Sun	Char	0	Ran X	Snow
TEMP	To 32	32:50	\$0.70	70-45	45 vo
W140	Sui	X	7	Feex	or No.
HUMIDITY	Ογ	Hoose	X	9-	2

SUB-CONTRACTORS ON SITE:
WOODWARD - CLUDE CONSULTANTS HAR OF TEAM # 2
CCOUNTED - (COOR CO.
EQUIPMENT ON SITE.
HAB KET
766 82
WORK PERFORMED (INCLUDING SAMPLING):
· SAMPLED
• 2027 CHENNO, 2029 CHENE AND, 2055 CLEVELAND.
2032 CLEVE AND 2027 WASHINGTON, 2033 WASHINGTO
2040 WASHINGTON, AND 2058 WASHINGTON
· (a TOTAL LORD SAMPLES EACH (TETAL 48)
· 2027 WASHINGTON AND 20-10 WASHINGTON
· 3 LEAD QUALTY ASSURANCE SAMPLES EIGH
· (TOTTEL Le Soma CS)
· ALL SAMPLING DONE DOW SOP)
" ALL SAME LABORNE DONE DAW SOF 5
"ALL DECAR DONE DAW SDR 6
· ALL BORENG ASANDONMENT DONE DAW SOD 7
SAMPLED 2027 CLEVELAND
· 3 SAMPLES TOTAL LEMO (TOTAL 3)
·

FUECT NL/TOROCORP	REPORT NO \$ 9-2
жю <u>89 мс114 V</u>	OUTE 11/14/91
DUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	
TEALTH AND SAFETY LEVELS AND ACTIVITIES.	
MODERTO LEVEL "O" PROTECTION	
ROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	•
ECIAL NOTES.	
MCRROWS EXPECTATIONS	
LEE (2143, 2151, 2161, 2029, 2037,	2045, 2047)

	DATE
	CAY S W M X S
A-E DAILY QUALITY CONTROL REPORT	WEATHER BOTH Char Char Stone
	TEMP To II II.30 50-70 70-45 45 45
PROJECT NO TARACURP JOB NO 89 MC/19 V	HUMIOTY ON MOSE HUMO /- D
CONTRACT NO	
SUB-CONTRACTORS ON SITE: LAyne - L	12578-7
	"Acker"
ECUIPMENT ON SITE. Dr. 81 - R1'9	trailer, steam chance
20' Flat bed	7-2111- ///
grout mixer.	
WORK PERFORMED (INCLUDING SAMPLING):	
	Not Drill Righ
- Decentamination	<u> </u>
Drilling equipmen	
0 1/2 4 140	play of TROUPO
- Drilling & san	<i>p</i> (7.5)
Burebule	
- 1/2 day 7	suil samples for
analytical Ana	1/2565
- cullected 6	soil sumples for
que fechnica	l analyzes.
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	·
	SHEET OF
	SHEET JF

PRIJECT NE TARACURP	(Communion Show)
2810 29MC 114V	DUTE 11-15-91
OUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	
	·
HEALTH AND SAFETY LEVELS AND ACTIVITIES.	
in de Sient / evel - D	
Trucks, pland plat safely g steel food boots, rubberg	123767
steel food bouts, rubberg	loves.
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	
Decun procedures Betwill	exclusion &
support Zunes:	
Action: implement of	d date as
Action: implement on a tub with vater & scr Zs Decen boots & N	6-4 y /00es
<u>پ</u>	
SPECIAL NOTES.	
CMCRROWS EXPECTATIONS.	
B1519 d-1/119 112 22	
2-3 more bore holes. W	d perhaps
to be defermined Music	1241

BY Coye Daven TITE 920/1925

	DATE		15/91		
	. 044		71	THIJ	
A-E DAILY QUALITY				1	
CONTROL REPORT	weather	Bross Cha	w power	Ren	Sow
		 	50 5070	70-45	اهام
COE PROJECT HANGER TEOM BUCHOLTE	TEMP		_ <u> X</u> _		ori NO.
PROJECT_NL/FARACORP	W# \0	SH XIV		٠. ـ	
JOB NO. 89 MC 114V	HUHIDITY	مر اسم	- HUTE	10	~ 2
CONTRACT NO_OO2 /					
SUB-CONTRACTORS ON SITE:					
WOODWARD -CLYDE CONS	NETANTS /	AB T	Cam A	2_	
EQUIPMENT ON SITE.		<u> </u>			
HAR KIT					
WORK PERFORMED (INCLUDING SAMPLING):			were .		
· SAMPLED 2029 1 5E, 203:	7 LEE, a	20451	LEE		
2047 LEE, 2143 LEE, 2	157 LEE	-31/4/-	1 5 5 4	<u>ac</u> _	
· la TOTAL LEAD SAMPLE	3 met	(DIR	(3/0)		
SAMPIED 21101 LEE					
0 3 TOTAL LEAD SAMP					
· SAMPLED 2161 LEF, 204	5 LEE		1		
· 3 TOTAL LEAD DUPLITE	ATE SAME	- 1 -	-	777	
· SAMPLED 2029 LEW 2045	IFF , ZIS		1	9)	
· 3 LEAN QUARTY ASSU			Croner		
" ALL SAMPLENG DONE FAND S	<u> </u>	-			
· ALL SAMPLE LARBITUG DONE	1 AU 30P 3	•			
'AL DECON DONE TAW SOP 6	~ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	- IMW	500 7		
ALL DOWN PORENE ARA					
					- 1

		REPORT NO.	10-2
inject	NL/TARACORP	DATE	11/15/91
YE MO	89MC114V		
	CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)		
DUALITY	CONTROC ACTIVITIES		
· <u>, </u>			
EALTH.	NO SAFETY LEVELS AND ACTIVITIES.		
(04 - 0	EPTED LEAST "O" PROTECTION		
MOD			
	US ENCOUNTERED/CORRECTION ACTION TAKEN:		
BOBLE	US ENCOUNTEREDICORRECTION ACTION TAXABLE	CONT YARD	- TOOK
2	161 LEE HAD A PILL		
	NLY ONE SAMPLE		
PECIAL	NOTES		
CMCRI	ROWS EXPECTATIONS	2104	MADISON .
	12 MASHINGTON (2005)	10.30, 210-1	(1818 MI)
10-	NOWS EXPECTATIONS WESTER WASHINGTON (2005) 21) GRAND (1923, 2149) DELM	PR \$ 20 -	
_ (21) 000000000000000000000000000000000000		
119	29)		

BY B. WORDY ROMADLT TITE STAFF ONG

(Communition Sheet)

tur :	UAY	5			<u>''' '</u>	()
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Bright Sun	Char	X	Ran	Sow
OE PROJECT HANGER TERRY BUCKOLTZ	теме	To IZ	32.50	\$ <u>\$</u>	70-45	65 LO
PROJECT NL/TARACORP DB NO. 89 MC114V	WINO HUMIDITY	<u>24</u>	Moder	12500		-1
CONTRACT NO 0021						
SUB-CONTRACTORS ON SITE:			·			<u> </u>
WOOD WARD - CLYDE CO	ONSULTAN	<u></u>	HA	3 TE	2M _	
ECUIPMENT ON SITE.			·			
HAB KIT						
				<u> </u>		
WORK PERFORMED (INCLUDING SAMPLING):						
SAMPLED 2148	BENTON	1 . 7 .	1 21	28	215	2.
2108	2120,6	(/.35	yar	30-1		-/
	ADAMS					
4537 SAMPLES FO	R TOTAL		<u> </u>			
6 SAMPLES F	OKOH	200	<u> </u>			
2120 AND	<u> </u>	OP	# 1			
SAMPLES TAKEN	LAW 5	4	50 P	#7		
BORINGS BBANDO PERSONNEL & EQUIP	NED IN	# W.	<u> </u>	TAU	50P	始。
PERSONNEL & BOULF	TM END	FRO	NT	VARD	•	
2108 ADAMS	DNEY	7 / (9	UNS	I TR	ER 2	
WAS SAMPLED	·DOR	YAK	20			
AND GRAVEL !	D BACK	<u> </u>	Po m	2120	and	
6 SAMPLES FOR L	D THREE		10.01			
2138 ADAMS a.						
			S۲	EET	_ JF _	2

1 Oct 90						(Communion SA	· ()
11	- TARACO	RP		AE	ORT NO	10-1	
WEST. ————————————————————————————————————	1 1 1 1 1 1 1	<u> </u>			OUTE_	11-15-91	
3 NO	mc114v		SI D SILIPPAT	IONS)			
UALITY CONTRO	X ACTIVITIES (INC	LUDING FI	ELU CALIBRA	<u></u>			
	<u> </u>						
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		ACTIVITIES	 5.				
ealth and saf	ETY LEVELS AND	/	15 1 / / / / /	D			
	Ditto Consol	an A	EQUIPT	DECOM	BD.		
	PERSONN	<u> </u>					
ROBLEMS ENCO	DUNTERED/CORRI	ECTION AC	TION TAKÈN:				
ROBLEMS ENCC	DUNTERED/CORRI	ECTION AC	TION TAKÉN:				
ROBLEMS ENCC	DUNTERED/CORRI	ECTION AC	TION TAKÈN:	·			
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		ECTION AC	TION TAKÈN:				
		ECTION AC	TION TAKÈN:				
			TION TAKÈN:				
				1/ 30	1707	EDISON	
SPECIAL NOTES.				, 1639,	1707	EDISON	
SPECIAL NOTES.			, 1635	, 1639, DELMA		EDISON	
SPECIAL NOTES.		1/-2 7	, 1635 7, 1732	DELIAR		EDISON	
SPECIAL NOTES.		1627	, 1635 7, 1732	DELIAR		EDISON	
PECIAL NOTES.		1627	, 1635 7, 1732	DELIAR		EDISON	

	DATE		//-	18-	91	 .
	CAY	S	Ž	\w	A H	S
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Bright Sun		Overcent	Ren	Snow
	TEMP	To 32	12:20	\$2.70	70-45	دلات
COE PROJECT HANGER	w !N O	Sui	Moder	10-30 mg	F-00	n NO.
JOB NO. 29 MC/14 V	HUMIOTTY	Ογ	X	HUMB		
CONTRACT NO	<u> </u>	. /	lian			<u> </u>
SUB-CONTRACTORS ON SITE: 2200 - West	ern D	-111	7-9.	<u></u>		
EQUIPMENT ON SITE. Acker drill	R15					
steam cleane	- G	~u~;	* 101	xer.		
				219		
WORK PERFORMED (INCLUDING SAMPLING): Deiffed	م مدد ام	/R/	7 /	7	1	
TR0008, TR0007, 2	ad / Ke	<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>	0			
- collected 7	and lates	1/	2014	SAMP	les	
manufalle Licit	fron.					
a 11 feet 6	Gostecha	100/		13.1	مهدر و	111
per Borehole	10cafrag	11				
				Melk	(-C /)	
- Cullacted	2406	40		7///		
from TROC	<u> </u>					
- cullective 2 s	8-0/05	for	- (DA		
\$ 100 TRUCK	07 , 3	ne 7	100	80		
- Cullet 10 /	duple	1765	- 1	95.		
from Th	0007	(9	- 6)			
	904	Lech	5 4.0	-1/		
- Collected OA f	0008	<u>, , c, </u>	700	100 7		
<u> </u>	<u> </u>					
						
			5+	-€ET		

	NL/ TA-ACORF)	AEPORT NO	1/-18
MEST ALCO	89MC114		O.TE	11-18-91
B NO	ONTROL ACTIVITIES (INCLUDING	FIELD CALIBRATIONS		
UALITY (ONTHOU ACTIVITIES (INCOCOCIO			
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EAI TH A	NO SAFETY LEVELS AND ACTIVITIE	ES.	1 - luces	stee!
Mo	10 1 /000/ -0	1Sart No	7. 9700	
			2 deilleis	he /pe-
	Store Controll (LIYAL DESTIL		
ROBLEM	S ENCOUNTERED/CORRECTION A	CHON TAXON	to prount	forthi-
	· Tapm 40	9 6)		
	swelling.			
				
	MOTES			
PECIAL	NOTES.			
			7R-0006	
CMCRR	OWS EXPECTATIONS:	ruf -up	TP-1005	TROUSE.
	d-11 6 3	soph	Ange follo	7 ROW 2
	TROOM	33 11-4		
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				sr. staff
			8	Se. STITE
		BY Loye	Jarea TITLE_	3,00,00
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		-		- 2 (Costinued)

Figure 2 (Continued)

	DATE 11-18-91
	OAY S X W DH F S
A-E DAILY QUALITY CONTROL REPORT	WEATHER BIOTE Char Overcome Asin Show
PROJECT MANGER Terry Ruchboltz PROJECT NL/TGTAROCP JOB NO. 89/101/11	TEMP TO 22 27-50 SO-70 70-45 45-40 WIND SUB MOORE PAINT PAROOTENS. HUMIDITY DY MOORE PAINTS //-2
CONTRACT NO 0034	
SUB-CONTRACTORS ON SITE:	0 = 1
Washard-Clyde Cors	Hats HAB Tem 2.
EQUIPMENT ON SITE.	
HAD KIT.	
WORK PERFORMED (INCLUDING SAMPLING):	m = 2021 Washington
2008 20% 2104 , Grand 1925	2110 × 20
1639, 1707, Admin	= Et 48.
(SAMPLUS FACH FOR LAST LEAD	Tov 2036;
SAMPLED WASHING	
(3 SAMPLES FOR TOTAL	
QA sopes-	
(Vladison - Jag) - 3 5-200	Total - 9.
Drand -1933 -33200	
Edison-1435- 35-ples	
[300 Q 0 100 to	+ the sop#6.
Second Comprise	TAN Sin #7.
South It	d 500 #4.
3-3-4-	
1 10	
Lead Din	(total)
Ed 300 -1635 - 3 Samples	
	SHEET

	. 1 -		(Commution Sheet
PROJECT.	NYTaracorp	REPORT NO	11-7
JOB NO	89ML114V		117891
QUALITY CONT	POL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)		
			
			
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		<u> </u>	
HEALTH AND SA	FETY LEVELS AND ACTIVITIES.		
	Modified Leve D	•	
	Personal & Equipment de		
	to - ext.		
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PROBLEMS ENCO	NUNTERED/CORRECTION ACTION TAKEN:		
	· · · · · · · · · · · · · · · · · · ·	•	7
PECIAL NOTES.			
	×**		
CMCRROWS EXP	ECTATIONS:		
	5-male - Adams 2154	2160	·
	Elizabeth 1920, 1918, 1725	7	1715
	1711 1707 1707	103,1609	
	Remodel 1136.	1,,,,,	
	0		

BY Stallet TITE Stalf Scientist

A-E DAILY QUALITY						
CONTROL REPORT	WEATHER	Bright Sun	\(\times \)	0	Ran	Snow
COE PROJECT HANGER TERRY BUCK HOLTZ	TEMP	To 12	32.50	55.70	70-45	د ك به
PROJECT NL/ TARACORP	W 1440	\$11	Moor X	HOT	Reco	or NO.
· · · · · · · · · · · · · · · · · · ·	HUMIDITY	3	Moor	HUTTO	1/2.	- 7
JOB NO	1,02,0	X_{-}	-		12	
		CHIT	475			
SUB-CONTRACTORS ON SITE: WOOD WARD CLY	DE COR	30017				
EQUIPMENT ON SITE. HAB XIT						
				<u> </u>		
WORK PERFORMED (INCLUDING SAMPLING):						
	ABETH /	715	,17	<u> </u>	725	
21.8	الم الم	7 +	411	م		
Greenwood 1001	7			<u></u>		
Total lead	- 35 × 24					
Stal Red	ND.					
5/ 11 mm / C	1 1					
Une parine	whard		ota	- 9		
5 Elizabeth Mass-	beck hacel		97.4	<u>`</u>	=	,
H: 21/24 1914 - (backyard)					
Matrix Soike & Matrix Site Dup		•				
El- Led 1920 - 6 to	tal sample	25				
				·		
11.10 1 600	- Ih	ه ک	0#1	<u>' </u>		
76	d1 4 00		A+ 3	EAU S	SOPT	¥7 <u> </u>
Abadand bor Decord persons	1 5.04	41				
Souled with 1	m sup.	<i>II_/</i> ,				
				€ET	<u> </u>	<u>~</u>
			21.		_~ -	

PROJECT	NL Toracom	REPORT NO	12-7
OH.BOL	NU Toracorp 89MCHUL		11-19-91
	ONTROL ACTIVITIES (INCLUDING FIELD CALIBRAT	IONS)	
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		·	~~~
HEALTH AND	SAFETY LEVELS AND ACTIVITIES.		
	Modified level		
	Decon egypnent i	personal	
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PAOBLEMS E	NCOUNTERED/CORRECTION ACTION TAKEN:		
			
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·			*
PECIAL NOTE	is.		
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CMCRROWS	EXPECTATIONS:	·	
	Pur Parunara.		·
	Somble - Washington	911 917 919	721 813,
·			

BY Tollede TITE Staff Scientist

	DATE 11-19-81
A-E DAILY QUALITY CONTROL REPORT	WEATHER BOTT COM COMPANY AND SHOW X X X X SOW
COE PROJECT MANAGER PROJECT	WEND Sul Magair Han Recort No. HUMIDITY Dry Magair Huma
EQUIPMENT ON SITE. Acker - Dr. Steam cleaner,	
& greated TROUGE.	IM TROUS, TRUUS
	tical sold sarphs for
- Collected An (Cost dop for	A. >2-p/ from from (4-6')
- C-//cfid 6	gentich. Surples
- cullected 6 from TROO	0 2
from the	potech da oust sma 6-8')

PROJECT	NL	11	APAC	CORP			E 10	(Continuation Show
		-//				_	11 NO	11-19-71
-C8 NO							W.e	
OUALITY C	ONTROL AC	TIVITIES (II	ACT NO INC I	FIELD CALIE	BRATIONS			
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	* <del></del>							•
HEALTH AND								
14.	- difié	1 200	e/-D	)				
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PROBLEMS E	NCOUNTER	ED/CORRE	CTION ACT	TON TAKEN	· · · · · · · · · · · · · · · · · · ·			
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- R	معمروم	WO-K	afi	ler 1	JIN Z	104-4	<u></u>	274
	3 bit non	رو و و	prof_					
		-						
PECIAL NOTI	es T	-2	- ( a d)	RJin		1, 10	4.	010-7
	-sest				<u> </u>			
		<del> </del>			<del></del>			
			·	·				
CMCRROWS	EXPECTAT	IONS:						
	2	0-11	، ر م	1-1/1	TR	000 /	/ 	
		TRO	00 -	3 27	4 71	000	2	
<del></del>								

BY Oye Daice TITE geologist.

A-E DAILY QUALITY					1-	A =1
CONTROL REPORT	WEATHER	Bright	Chee	Orace .	R=1	Snow
CONTROL REPORT		Sun		X	IX _	
		Ton	****	50-70	70-45	45.00
A	TEMP	107	X.Z.	3,0		
COE PROJECT HANGER TERRY BUCHOLTZ		S24	Moon	< H51	Rea	M NO.
PROJECT_NL/TOPACORP	WINO	_		\	<u>.</u>	
PHOJECI		Oy	Moon	(4500	113	-2
JOB NO89mc//4V	HUMIDITY		1	X	`	
CONTRACT NO DOZI			·			
SUB-CONTRACTORS ON SITE:						
WOODWARD-CLYDE CONSUL	TONTS HA	BIZ	man.			
EQUIPMENT ON SITE.						
HAB KET						
	<del></del>			_		
WORK PERFORMED (INCLUDING SAMPLING):						
· SAMPLED						
- 1409 KANOY 1322 KA	n/=04 122		and a	24.	711	
- 1209 KHWEN 1422 EE	CVARITY TELE			.,		
VOWERY //2/2 KAWE	309. Malla	KEN	INE	7		
· Le Samples Turen LEAN	De N (D	770	<u> 36)</u>			
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" ALL DECON DONE THO SOE LA						
" AL SAMPLING DONE SOP						
FIL SAMPLIANS	205					
· ALL SAMPLE LABORING DAW S	)P3					
- ALL BORTHE ABOUGH MENT IF	w 500 7					
FIG. FORESTE						
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				CET	1 5£	7

PROJECT.	NL/THERCORP	я <del>роятно. 13-2</del>
0M, BOL	89mc 114V	DATE 11/20/91
OUALITY	CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	
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	NO SAFETY LEVELS AND ACTIVITIES.	
7/1005	TED LEVEL "D" PROTECTION	
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	ENCOUNTERED/CORRECTION ACTION TAKEN:	· • • • • • • • • • • • • • • • • • • •
	CHEN CHE - DINE NOT HIM	
	NONE DU BACK VARO (2 STORY	
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<del></del>	<u> </u>	
PECIAL NO	TES	
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CACRROW	'S EXPECTATIONS:	
	NWOOD (940, 1006, 1009, 1014, 10	18.1024.1036
	(4000 ( ) , 1000 , 1000 , 1211 ) , 100	
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	DATE		11-	- 24-	-91	<b></b> .
	- OAY	S	М	\vec{x}	H Z	S
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Bright Sun	Char	0.00	×	Snow
Tory Bucholtz	TEMP	To 32	H. 80	\$0-70	70-45	45 vo
PROJECT NL ITOTALORP	W#10	Sal	<b>**</b>	Hgn	136	iff.
108 NO. 89MC114V	HUMIOTTY	Ογ	X	Huma	12-	7
en contractors of site.						
Wood word- Clyde	Consult	12/15	· 			
7						
EQUIPMENT ON SITE.						
WORK PERFORMED (INCLUDING SAMPLING):  Somelel - Washmato	011 01	M	719	921.	813	
1001	7"1.7"			,		
		. 7	<u> </u>			
Tital Lead	Sayous		<u></u>	:		
	-A 1 5	<u>.</u>	- (0	<u> </u>		
Abadond Grang IA Sampled Id. 5.997	w Sap.	#7				
Sanded Ida Sopt	4.					
				<del></del>		
				EET /	SF	a

PRINECT.	NL/Taracions	REPORT NO	12-7
.C8 NO	NL/Taracing 891/41	OUTE	11-20-91
QUALITY CONTI	ROL ACTIVITIES (INCLUDING FIELD CALIBRATION:	S1	
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		·	
HEALTH AND SA	FETY LEVELS AND ACTIVITIES.		
	Modified LevelD		
	Personel & Egyp.	ant decon.	
		.,	
PHOBLEMS ENCO	XINTERED/CORRECTION ACTION TAKEN:	•	
<del></del>			
PECIAL NOTES.			
<del></del>			
CMCRROWS EXP		12.12 .1.0	1233
	Sample - Grand 1309	1312 1318	3.03
	1 2 1 1001	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	

BY Wollie TITE Staff Scient: ; x

	DATE		-20-	91	
	CAY	S	TTX	TH	7 5
A-E DAILY QUALITY					
CONTROL REPORT	WEATHER	Bron C Sun	مر مر	- Z	Snow
	1. AP	To 32	2.50 50	70-45	45.00
COE PROJECT HANGER	W140	34 N	cor Po	n Rec	XX1 NO.
PROJECT NU TARACORP  JOB NO. 89 MC//4V			0001 1947	neo .	- 1
CONTRACT NO.	HUMIDITY		X		
	Λ-	: //:-:			
SUB-CONTRACTORS ON SITE: Layer - Wester	1 2-	i / //ng	<u> </u>	<del></del>	
				-	
	1 0		<u> </u>	cha	
EQUIPMENT ON SITE. Acker: Dr.//	<u> </u>			<u> </u>	7,-
grout pixer					
WORK PERFORMED (INCLUDING SAMPLING):					
- Drilled de			RIMAI	7,75	
Bureholes in TRUST 659	sixe				
TRO901. TRO	103,7	-200	<u> </u>		
•	·				<del> </del>
- Dilles + sampled	Burch	./1	in K	164-6	1, 9
Property R	0.000	/			
- Collected Lead duplicati	frum	TRO	204	fra	6
Culleted Quelity Assur.	sumple	frun	TROOD	1 @	(A)
- C. Mandan Geo tech marel	Ouslis Ad	1 F~~	TROO	1 6	
- Cullected Metery Spike	1 spike	dep.	f~-	TR	0003
	<b>1 10</b>	(13-/	· <b>-</b>		
- Collected Quelety Assu-	· Sour	TR	0003	0 6	2-6-1
- Collected Gentechairs / de	/ /	11. 6-	TRO	ر ده	9 (y'
- Collected Gentlehairs) as	Variary N	<u> </u>	, <u> </u>		
	<u> </u>		1 0	(13	75)
- Collected Lead deplicate	4750	7 2 3	· ·	(1-	-1
- a. Ila La Dulle AN.	frm 7	K UOU			- 1
- Collected Gestechnical	Ovalaty 1	4224.	(	·	
			5 ma	(6 -	8)
			SHEET_	<u> </u>	

	NC / TARACURP		(Communion Sheet
PROJECT	89MC114V	_ neromino _	
-C8 NO	89MC114L	OUTE_	11-20-91
QUALITY CONTRO	OL ACTIVITIES (INCLUDING FIELD CALIBRATIONS	)	
HEALTH AND SAFE	TY LEVELS AND ACTIVITIES.	<del></del>	
	dified Level - D	· · · · · · · · · · · · · · · · · · ·	
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PROBLEMS ENCOU	INTEREDICORRECTION ACTION TAKEN:		
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RIPS	to be sunked	· · · · · · · · · · · · · · · · · · ·	
	synt-western to born	13 - 10-1	back up
Eupt	<u> </u>		
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PECIAL NOTES.	N/A		
 .	N/A		
			·
MORROWS EXPE	CTATIONS: cumplefo drolling Properfy set-up 166 properfy	s 6 supp	173
Rich Oil	property ret-up	F 647 417	· · ·
on Bo	re gripinty		

BY Joyer Davas TITE gestagest

	DATE		11-	21-9	?/	— .
	- 0AY	S	M T	"	<u>X</u>	S
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Bright Sun	×	Overcome	Ren	Snow
Trace Renderly	TEMP	To 32	17.50	\$9.70	70-45	೮ಀ
PROJECT MANGER Terry Bucholtz	WIND	Stat	**	Мфп	146	nno. LH
008 NO. 89M C 1/4V	HUMIOTY	Oγ	X	HUND	18-	1
CONTRACT NO						
SUB-CONTRACTORS ON SITE:	Cansult	-15				
EQUIPMENT ON SITE.				<u>.</u>		
HAB KIT						
				·		
WORK PERFORMED (INCLUDING SAMPLING): Scriptol - Grand 1/65, 1009, 1020	1309 131	12 1	318	1325	- /3	ર3
50000 1020)	7	7			
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Total lead say	205 - 45	2'				
Jotal Red 3 mg						
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Decomed Second s Abandond boring Saperal TAND S	- A \ S	<u>** </u>	7.	3343	<u> </u>	
Abarband bocco	1/10 3°	10				
Saper to Se						
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PROJECT.	NITaracura	REPORT NO	13-7
-C8 NO	NL/Tarcorg 89MIIYV	O/TE_	11-21-91
OUALITY COM	ITROL ACTIVITIES (INCLUDING FIELD CALIBRAT	TIONS)	
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		·	
HEALTH MOS	AFETY LEVELS AND ACTIVITIES.	·	
<u> </u>	ModRiel Jevel D.	experient à	20.01
	Decoral Decoral	- Josephan -	persone
PROBLEMS EN	COUNTERED/CORRECTION ACTION TAKEN:		
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PECIAL NOTES			
PECIAL ROTES.		·	
			
CMCRROWS EX	RPECTATIONS:		
	Sayale - Ioua 8 825	317 8/6 870	
	835	407, 912,715, 8	01
			
			

BY Goodlede TITE 51- Ff Scientist

DATE 1/2/19/

(SAMPLE FORMAT)

	- 044	S	L	ار" ا	۲۱۴	S		
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Brott Sun X	X	0	Ren	Snow		
	TEMP	To 32	32:50	50-70 X	70-45	ص که		
PROJECT WANGER TORY BUCKNOLT	WIND	SX.X	Moder	НфП		21 NO.		
JOB NO. NL / TARA CORP	HUMIDITY	Ογ	X	HUTHO	14.	-2		
CONTRACT NO 0021								
SUB-CONTRACTORS ON SITE:								
WOODWARD - CLYDE CONSULTANTS HARS TERM # 2								
ECUIPMENT ON SITE.								
HAB KIT								
WORK PERFORMED (INCLUDING SAMPLING):								
4.50.00.00								
LANGE COMMISSION INK GREE	DUWAID, 10	No Car	Car.	INDAD.				
1024 Glooninger 940 Glo	DUW000, 100	9.40		000		•		
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· ALL SAMPLING DAW SOP								
· AL SAMPLE LAPSTING DAW SUP	5							
" ALL DECON DONE THE SUP 6								
· AL BORDIG ADAMDONMENT DONE TAN	SDOT				•			
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			<u> </u>	HEET	`F			

PRIMECT. N.L. /TOPPACORP	REPORT NO. 14-2
	OUTE 11/21/91
OUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	
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HEALTH AND SAFETY LEVELS AND ACTIVITIES.	
MOOTETEN LEVEL "" PROTECTION	
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	
	•
	•
PECIAL NOTES.	
·	
CMCRROWS EXPECTATIONS:	
GE REYNOLOS (1016, 1024, 1030, 1032	•

BY WONDY PETNEOUT TITE STAFF ON G

(SAMPLE FORMAT)

	DATE 11-21-91
	DAY S W W M F S
A-E DAILY QUALITY	WELTHER BYTH Char Overcome Ram Show
CONTROL REPORT	WEATHER SUN CLAY OFFICE RAN STON
COE PROJECT MANAGER	TEMP TO 22 22-50 50-70 70-45 45 40
PROJECTNUTTARACURP	WIND SI MOON HON RECONNO.
108 NO	HULLIOTTY OY MOON HATE
SUB-CONTRACTORS ON SITE: Layne- West	ern Drilling Cu.
Zigne ver	_
	. steen cleaner
grout mi	Xer.
WORK PERFORMED (INCLUDING SAMPLING):	
	May on the Rich oil
site - d-illes &	12-1/cm RO 0002
- Set-up and dilled	and venelou
BU 0001 & BU 000	
	les for Analytical testing
on \$6000	1. for QA. testing @ F-5
RODOO2 - C-lecton 2 5201	les for Matrix spoky
S Matrix spike	dup. @ (8-10')
-8	
f Collected 7 sail suple	
001 Collected Isample for	
Collected Lead diplosts Collected Matery spik	
Collected house	@ (13'-15')
- cullected (Quality	AJJ. JAPPI 5-00
4	310002 @ (4-6)
	SI-€€T F

1 Oct 90		
PROJECT NE/TARACURP	a, wat so 🚅	(Communition She
DBNO 84MC/19W		11-21-9
QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)		
		
		····
		
HEALTH AND SAFETY LEVELS AND ACTIVITIES.		
H - d; f, ed Lovel-D.		
·		
POBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN		
Nº1c		
	 	
PECIAL NOTES. on Borehole BUDDE		
of fill mitt. overlaying no	tural no	steriel.
		
MCRAOWS EXPECTATIONS. Cumplete d-11	1/12 @ +	4
BUFG Location. BUIS 000	3	
- drift three Gentechnical pure	holes	

BY Joya Daw TITE Golyist

	DATE		11-2	2-91		
	- OAY	S	<u>u</u> 1	7~7	TH C	S
A-E DAILY QUALITY	ı				X	<u> </u>
CONTROL REPORT	WEATHER	Bright Sun	Char	X	Ren	Snow
	TEN .	To 32	H-20	50-70	70-45	45 00
COE PROJECT MANGER TECCY Buchaltz	WNO	S24	Noger	НФ1	Rea	21 NO.
PROJECT NL/TGGGO-P	HUMIDITY	Oy	×	Humb	1	
ONTRACT NO OP 2. 2	Howlott		X		<u> </u>	
SUB-CONTRACTORS ON SITE:						
Woodnesd - Clyd	e consu	Had	.5			_
EQUIPMENT ON SITE.						
HAB K:+						
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WORK PERFORMED MINCLUDING SAMPLINGI:	- 1105	910		2	818	
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Lead Duolientes-		, ,				
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816 (3)						
State St 1102 (3) 2	(a tota	(1				
Q1 ₆ (3)		·				
Daniel Egypout !	Personal	II/	ک مہ	4 م	<u></u>	
Abordand Tracks	=AW SU	1 # T	<u> </u>			
Souded FAN JSO	, #1.	<u>`</u>				
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PROJECT.	NL / Tarocorge	REPORT NO	14-1
.O8 NO	89MC114V	OUTE_	11-22-91
QUALITY CON	TROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)		
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		_ 	
HEALTH AND SA	AFETY LEVELS AND ACTIVITIES.		
	Modified Levelb.		
	Personel & Equipment des	<u> </u>	
PROBLEMS ENC	OUNTERED/CORRECTION ACTION TAXEN:	•	
			
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PECIAL NOTES.			
			
			
CUCRROWS EX			
	Saylo - I	घर अर १३	0,825
	\$\frac{823}{90}	9, 9,2, 9/3	

BY Shalled TITE St- Of Scientist

	DATE 11-22-91
	OAY S W M M S
A-E DAILY QUALITY CONTROL REPORT	WEATHER BOTH Char Overcome Rain Show
	TEMP TO 22 22.50 50.70 70-45 45 40
PROJECT WANGER	HUMIOTY OY MODER HUMO
CONTRACT NO	dana Ou
SUB-CONTRACTORS ON SITE: Layre - WES	7-6-7 20.
ECUIPMENT ON SITE. ACKED doill	Ry, steam clean
gruct	- mizer,
WORK PERFORMED (INCLUDING SAMPLING):	and and a site
- Completed y-1/1	BU-0003
- cullender 7	analytical surles
- collectes 1	Quality Ass. scaple
	frum (4-6')
	1 al a andersand
- Drilled and samp	he Taraco-p site.
BU-(16)/2) 17 7	, TA 00UZ, & TA00U3,
a Manter 6	anutechnical suil
samples from	each bore help for a
+ + to 1 of 18	each bore hale for a
· · · · · · · · · · · · · · · · · · ·	
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privites days. to	3 474 168.
	SHEET

PRINECT.	NL/TARACURP	್ಲಿಂಗ ೬೦	Iron She
-08 NO	84 MC114V	DIE 11-2	2-4/
OUALITY	CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)		
			
			
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HEALTH AN	D SAFETY LEVELS AND ACTIVITIES.		
mo	dified Lewl-D.		
- 1	sumpling pumps during	wore air	
	sumpling pumps during	the decation	
<u>ي</u>	F WO-K ACTIVITIES		
PROBLEMS	ENCOUNTERED/CORRECTION ACTION TAKEN:		
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PECIAL NOT	Es. Ligar-Notin to	golden	
	well material & supple	<u> </u>	
	Sur Morday		
MCRROWS	EXPECTATIONS: 20410 d-11/	manifering	
	EXPECTATIONS: Zegin d-illi	1st sixe	<u> </u>
			

BY Comestaring 500 /2/37

DATE 11/22/91

DAY S

A-E DAILY QUALITY					- ' '	`
	WEATHER	Bross	Char	Overcome	Ren	Snow
CONTROL REPORT	WEATHER	Sun	X	ļ		
	TEMP	To 32	32.50	, <u>\$0.70</u>	70-45	45 00
COE PROJECT HANGER TERRY BUCHOLTZ	_	- 04	Moder	Hon	Reco	X1 NO.
PROJECT_N'L /TARACCRP	MINO	8			1	
JOB NO. 89 MC/14V	HUMIDITY	Ογ	Moder	Hutted	15	- 2
CONTRACT NO 0021	(<u> </u>		···-	<u> </u>	
		.,				
SUB-CONTRACTORS ON SITE:			// -			
WOURWARD - CLYDE CONSULTANT	S MAB TO	n.m.				
ECUIPMENT ON SITE.						
HAB KIT						
				<u> </u>		
WORK PERFORMED (INCLUDING SAMPLING):						
·SAMPLED						^=
· 1016 REYNOLDS, 1032 REYNOLDS	10 30 80	VNOLC	S, //	DION	VNO.	<i>(</i> /2)
2156 mms, 2160 mms, 215	51	1.216	3.2	477-3,		•
AND 2201 CLEVE AND						
The Grames TOTAL LEAD	EACH (TAI	na 5	4)	· · · · · · · · · · · · · · · · · · ·		
· 1016 REYNOLDS AND 1032 REYNE	عمد					
· 3 LENO QUESTE ASSURANCE	E SAMPLE	3 (TO	me ((م)		
· IUILO REINOLOS						
· 3 LEAD DUPLIT ATE SAMPLE	(TOTAL)	3)				
" ALL SAMPLETING DONE THE SOR!						
· ALL SAMPLING LABORING DONE TOW	we 5					
" AL DECON DONE TAN SULLO						
" THE BORDE GRANDONMENT DUE THE	50P 7					
						
<u> </u>	· .					
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PRINCET. NL TARACORP	я роятно. <u>15-2</u>
28 NO. 89 MC 114V	DATE 11/22/91
QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	
	
 	
	
HEALTH AND SAFETY LEVELS AND ACTIMITIES.	
MODIFIED LEVEL "O" PROTECTION	
·	
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	
	·
·	
PECIAL NOTES.	
CMORROWS EXPECTATIONS:	
ELIZABEM (1709A, 1711, 1703, 1707) REYNOL	05(1136,1000)
KENNEDY (1702, 1706)	

BY WONDY REPUBBLE TITLE FROM BUILD

Figure 2 (Continued)

	OATE		_//-	26-	7/	 .
	· OAY	S	X	1"1	TH F	S
A-E DAILY QUALITY CONTROL REPORT	Ræntæw	Bright Sun	~X	Overcase	Ren	Snow
COE PROJECT HANGER Terry Bucholtz	TEMP	To 32	77.50	50-70 HQTI	70-45 Read	
PROJECT NL Tarkorp	WNO	SM On	100	Huma	14-	
008 NO	HUMIOTY		\times		179-	<u>_</u>
SUB-CONTRACTORS ON SITE:		1				
Woodwood-Chyde	_consul	r	Γ	~=		
EQUIPMENT ON SITE.					•	
HAB K+						
WORK PERFORMED (INCLUDING SAMPLING):						
Souple 13040	1311	1316	4	224	122	4
24)	lead -	21.		- , - /		
7012 400	leach -			4		
Matricks - Fran 1304	7-(3)	I	otal	_ 0	6	
13.24	= (3) >			.——— ——		
M Low Co.K. Dea =						
Mater Spike Dip.	3) >	To	tal-	- Co		
1324	<u>-(1)</u>					
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Decoral Equipment	مره دموم	حلع	IA	<u>ک سہ</u>	2p#	le.
Abailmed Boring =	14 1- 50	#17	<u>`</u>			
Sayled TAW 34p	<i>**</i>					
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OUALITY CONT	ROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)		
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HEALTH AND SA	FETY LEVELS AND ACTIVITIES.		
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	Decend an import i pers	orned.	
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PROBLEMS ENCO	DUNTERED/CORRECTION ACTION TAKEN:		
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PECIAL NOTES.	~ .	 	
			
CMCRROWS EXP			
	Sayde - Out for	Thaksa	wing)
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BY X Slend TIME Staff Scientist

	OATE		//-	- تح	91	 .
	- 044	S	X	"	DH F	S
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Brons Sun	Char	Overcent	Ren	Snow
	TEMP	ζ X	32.50	50-70	70-45	62.00
PROJECT MANGER		Su X	Moder	нал	Reco	M NO.
08 NO	нимютт	×30	Moder	HUMB		
SUB-CONTRACTORS ON SITE: Layne-	Weste.	-2	Z	-,11.	7,4	Cu.
EQUIPMENT ON SITE. COME - 75 Steam c/12	0-111	1	y			•
steam cles	ner,	3 – 0	(+ F /	7/XK		
WORK PERFORMED (INCLUDING SAMPLING):	80422	d-1	11:	74 5	-	
Jugging moning	10-1-0	we	//	10.	3 - <i>I</i>)
to the TRUST	450	ح ری	ے۔			
77 / 100						
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PROJECT.	\$ NL/7	TARAC	ORP	a FPORT NO	(Communition Sheet)
	89 MC114				
OUTIL COV	ITROL ACTIVITIES (INCLU	OING FIELD CA	LIBRATIONS		
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moo	AFETY LEVELS AND ACTI	ret-D	110-1	Ust Ty	urks.
R. 66.	ry buch	steel 7	ford boo	1	
	COUNTERED/CORRECTIO				
- 50	ands beaut	3 17 3	de the	A-ye-s	
Acti	ni add w	ster z	u pelvin	t sands	from
heasi	15 123/11	the pu	4 2 - 4.		
- 64	ld westher				
PECIAL NOTES	tion: dec.	مم در	upe-ly,		
	~ ~				
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CMCRROWS E	expectations: co ullict sample set well	coplete	d-,11:	74	Hours 1:
<i>&</i>	set well	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7			
					

BY Jaye Danie TIME Genlygist

	DATE		125/	<u> </u>		— ·
	. OAY	S	Ž T	"	THI F	S
A-E DAILY QUALITY	,		1.			
CONTROL REPORT	WEATHER	Bright Sun	X	Overcome	Ren	Srow
COE PROJECT HANGER TEXAL BUCHOLTZ	TEMP	To 32	II.90	50-70	70-es	L _
PROJECT Nº / THEACOR!	WNO	S24	¥	нфл		M NO.
08 NO89MCJI4V	HUMIDITY	Oy	Y	Humb	15.	-2
CONTRACT NO 002						
SUB-CONTRACTORS ON SITE:	752	w		· · ·		
WOODWOOD - CLYDE CONSULTANTS	MAR F	#	2	1.4		
					 ;	
ECUIPMENT ON SITE.						
HAR KIT						
WORK PERFORMED MICLUDING SAMPLINGI:						
- 5 AMPLEN 1711 PLTIABETH 1709 FIL	TO ABETH	1703	#2I	2435	2 /	
1707 FTAREN, 1000 LEVIL	0,03 113	LAR	erix	<u> 25 x</u>		
· Lo SAMPLES TOTAL LESS PACK	TOTAL 36					
· ALI SAMPLING DINE TAN 308)						
· An James I MARTIE DONE TON	500 5					
'AL DECON DONE THE SUPLA						
'ALL BORDING ABONDON TON TOW SU	P ¥					
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· . 19			SH	EET	_ <i>3F</i> _	

	(Communican Show
PRINECT. ALL THRACORP	REPORT NO. 15-2
DENO STACILLY	OUTE 11/25/91
QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	
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HEALTH AND SAFETY LEVELS AND ACTIVITIES.	
MUNTED I FUE "D" PENTEGION	
THE TEN FIRE OF PRINTEGIEN	
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	
SPECIAL NOTES.	
~ -	
CMCRROW'S EXPECTATIONS:	
ELIZABETH (1606, 1609), ALTON (1218, 122	D), 61000 WOOD (1105,
FLIZABETH (1606, 1609), ALTON (1218, 122 1108) REYNOLDS (1114, 1115)	

BY LOWERT FITTE STAGE FIXE

	DATE	· 	11-	25-91		
	OAY	S	X	"	Н	S
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Bright Sun	Cons. X	Overcom	Ren	Sow
- 3 \ 11-	TEMP	<b>5</b> .7	33:20	50-70	70-45	45 00
PROJECT MANGER Tera Due hot?	WINO	<b>S21</b>	100	Ноп	Rea	21 NO.
JOS NO. 89 MCHYV	HUMIDATY	07	m <del>g</del>	Humb	14.	-1_
CONTRACT NO 50 2 2			<u> </u>			
SUB-CONTRACTORS ON SITE:		1 ,		<del> </del>		
Weatherd - Chale	Consul	textor				<del></del>
EQUIPMENT ON SITE.	<u> </u>				,	
HAB KA						
WORK PERFORMED (INCLUDING SAMPLING):				820		
Saple - Toma	812, 810	980	10	042		
9,9,912						
Total tend - 3	6					
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	·					
<b>*-</b> 4.4				-4		
Decord exprest of	somel	<u> </u>	<u>  w</u>	5 gp #	<u>(                                     </u>	
Abady of Varion	FA-2 50	p#	7			
Sarphil Itm Soft	/					
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¤ಇಚ€೮₹. <u> </u>	NL /Tercorp		(Communion Sheet)
ON BO	89/4(1142	OUTE	11-25-91
OUALITY COM	NTROL ACTIVITIES (INCLUDING FIELD CALIB	RATIONS)	
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HEALTH AND S	AFETY LEVELS AND ACTIVITIES.		
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	Denne eg gant	i personal.	
PROBLEMS EN	COUNTERED/CORRECTION ACTION TAKEN:	•	
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PECIAL NOTES	·		
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CMCRROWS E	والمراجع والمستورة		
	Sample In	1304, 1311, 12 1224, 1230	1235,1238,
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BY XIDOLON TIME STORY SCENT ST

## (SAMPLE FORMAT)

	DATE	/.	1- 2	26-9	7/	
	DAY		X		H F	i s
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Bright Sun		Overcom	Ren	Snow
•	TEMP	To 32	X X:20	\$2-70	70-45	مالك
PROJECT MANGER  PROJECT NL/TARACORP  POS NO. 89 MCHLV	WF40 YTYDINUH	Suit Ory	''X'	Homa X	Feece	n MO.
ONTRACT NO	<u> </u>	<u>-</u> <u>'</u>				
SUB-CONTRACTORS ON SITE: Lyne - W	lester.	7 (	<u> </u>			
	11 0:0			team	· .C/	2200
CUIPMENT ON SITE. CHE-75 de	// Ris	•		/ 28/		
47007 751,	x e r :					
YORK PERFORMED (INCLUDING SAMPLING):						
Curpleted o	1-1110	74	m	sife-	13	
1.1/ 103-D						
:	well					
- Jagrania	1/ 125%	1/10;	1,42	· (4) 4	4-00	-4
- installed g	1 400/	<u> </u>	ده	<u> </u>	/	
2 2 5/0.	-x 0	<del> </del>	• 7, 1			
- cultecteu	aestech	110	/	٠,٠	, /.	
- Cullected sumple f	معول بر	٠٠ ٢	101	177	ر ره	•/
@ (6	4-66'	_)				
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PROJECT	NL/ TAR	ACORP	REPORT NO	
.C8 NO	89 MC119	1 -	OUTE	11-26-91
OUALITY COM	TROL ACTIVITIES (INCLUDING FIE	LD CALIBRATIONS)		
	N/A			
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			<del></del>	
HEALTH MOS	AFETY LEVELS AND ACTIVITIES.	<del></del>	<del></del>	
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541	fied Level-	Res R	16 be - 9	luces
<u></u>	foty glasses			
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85001 5110 511		· Y · vét.		
	COUNTERED/CORRECTION ACTION		·	. /
Acd.	in delited	-5/45/4		9//4
	problems justa,	the bule		
	•	<del></del>		
SPECIAL NOTES				
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CMCRROWS E	PECTATIONS:			
	- growt MW-103-D + WILL profict	de boreh	-le f-	,
	MW-103-D	1737011	Bunge	1001
	+ well profact	Ko/,		

BY Joyd Daran TITE Sentryist

	DATE	_///	-47-7			
	- OAY	S	<u>"                                     </u>	. "	TH F	S
A-E DAILY QUALITY		6	l Char	Overcome	Ren	Snow
CONTROL REPORT	WEATHER	Bright Sun	X		-	3.00
,	TEMP	To 32	32.50	50-70	70-45	موك
COE PROJECT MANAGER TERM BUCHOLTE	IEMP	Sal	بحب	Hgn	Reco	M NO.
PROJECT NL/TARACORP	WIND	3.5	X			_
JOB NO. 89 MC 1/4V	HUMIDITY	ολ	X	Humd	16-	2
CONTRACT NO DOZI						
SUB-CONTRACTORS ON SITE:						
WOODWARD - CLYPE CONSULTANT	HAB 7	Em	n#	<u>.</u>		<del>-</del>
WOODWARD - CLYDE WINGE						
EQUIPMENT ON SITE.						
HAB KIT						
AAB ALI			·			
WORK PERFORMED (INCLUDING SAMPLING):						
14 00 FT	TZABETH	1, 12	18 AL	TON	1229	
1 50 N 1114 REYNOLDS 115	0 0 0		0,110	5 GAR	DVW	<u> </u>
6 SAMPLES TOTAL LEGAL FROM	(42 1017	٥د)_		:		
· 1218 N. TON						
· 3 SAMPLES I SOON MATTER SOURCE	(70m2.3)					
			1-00	2)		
· 3 SAMPLES LEM MARKET SPEK	E DUPLE	ATE	(10)			
· ALL SAMPLING DONE TON SOI						
· ALL SAMPLE LABOTING TAWS	3 P 5					
· ALL DECON TAN SUPL						
· ALL BORONG AB ANDDNOWENT ILA	N 50 P 7					
		<b>\$</b> .				
	· · · · · · · · · · · · · · · · · · ·					
			Si	ÆET	F	

	NL/TAPA CORP	DATE 11/2-6/91
a ko	89 MC 1144	DATE
5.0.	CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATK	ONSI
DUALITY	CONTROC ACTIVITIES IN OCCUPANT	
		-
HEALTH .	AND SAFETY LEVELS AND ACTIVITIES.	
mad	TETED LEVE 'N" PROTECTION	
11)00		
9909! S	US ENCOUNTERED/CORRECTION ACTION TAKEN:	4.0.44
PHOGLE	US ENCOUNTERED/CORRECTION ACTION TO THE SECOND PROPERTY OF THE SECON	S TOLK DOWN LO 4/5 Harris
	NOW PORT OF 1218 ATEN'S 1 MED.	We has vises a
	NOW PART 30 1218 ATON 50 W	a Secolus Triera
10 1	Pross Plom III	
SPECIAL	NOTES.	
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TOMORE	ROWS EXPECTATIONS:	1990 12 1
1200	ALTON 1033 Mc CAMBRIDGE	
	16.5	
	77 -	
	77 0	

BY WONDY REONBOLT TITE SPAGE ENG

(Communion Sheet)

	OATE			1-27	7-91	• 
	DAY		- 7		TH F	S
A-E DAILY QUALITY CONTROL REPORT	МЭНТАЭW	Bran Sun	~	0.00	Rum	Snow
	TEMP	To 32	32:50	<b>%</b> 70	70-45	೮೦
PROJECT WANGER  PROJECT NL/ TA RACURP  JOB NO 89MC//40  CONTRACT NO	оми Утлопилн	% 07	Moder Moder	HSTED Y	F	ori No.
SUB-CONTRACTORS ON SITE:	<b>-</b>		). /	/		<u> </u>
SUB-CONTRACTORS ON SITE:	stern	<i></i>	-,/,	1775		<u> </u>
ECUIPMENT ON SITE. CHE-75 D-1	N/ R.	ist.	MI	+ e'-		
WORK PERFORMED (INCLUDING SAMPLING):						
- completes	-veit .		MI	U - X	3- <u>2</u>	
4			3	rac	1,2/	10
- justalled pumpe-	0031-					
ape-t						
- installed well p.	rstect	<u>o m.</u>				
		<u>.</u>				
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CORPOS 89 MC/14 W	OUTE 11-27-91
OB NO	
OUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATION	
N/A	
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HEALTH AND SAFETY LEVELS AND ACTIVITIES.	the total and the
HEALTH AND SAFETY LEVELS AND ACTIVITIES.  PORTSOL LOURS - D NA feel food Books, Tyve	d Nat, 34479 372300)
deal fred Bouts, Tyve	K
37111	
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN	
SPECIAL NOTES. Grouped used 41 62  2 633 Benfonte Cr	D Y ECAO. L (97/6)
SPECIAL NOTES. Grantes USER 4	16)
2 633 BO1737.77	iste-
210 2/03	
TOMORROWS EXPECTATIONS.	1 Nonce 5 4 Allow.
	4 Allow.
drell & sample	

BY lay Daw TITE 600/13/24

	DATE	//	1/27	-191		
•	- OAY	S	u T	×	TH P	S
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Bright Sun	Curr	Overcess	Ren	Snow
·	TEMP	To 32	22,50	50-70	70-45	కరు
COE PROJECT MANGER THIS BUCKBLTZ	WINO	Sal	1400	нол	Rea	or NO.
JOB NO	нимютт	Dγ	×	Humd	17-	2
CONTRACT NO				·		
SUB-CONTRACTORS ON SITE:			# 2			
WOODWARD - CLYDE CONSULTANTS	HAIS T	<i>=14111</i>				
EQUIPMENT ON SITE.						
HAB KIT						
WORK PERFORMED (INCLUDING SAMPLING):						
· 5 AMPLED · 1200 ALTON , 1920 125 , 10:	33 mic C	mo	1-06	<i></i>		
·1200 ALTON MED 126, 10:	1el					
· 63 AMPLES TOTAL LEGG FORM (TT	1757-101	D) 7704	9)			•
' 3 SAMPLES LEGO QUELLE ASSAUL	ONCE			:		•
' 3 SAMPLES LEAD DUPLICATE (	TOTAL I					
MI SOMPLING DONE TOW SOPI						
" BUL SAMPLE LOCATION THE SOF 5						
" ALL DECON DONE DOWSON 6						
· ALL BORONG ABANDONMENT DINE DA	w 5017	<del></del>			<del></del>	
	· · · · · ·		SH	<b>€</b> ET	_ JF .	l

PUECT. NL FTANACORP	ABOATNO 17-2
RIJECT. NL TAMACORI	DATE 11/2-7/91
an XIIIC/III	
UALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	
	·
EALTH AND SAFETY LEVELS AND ACTIVITIES.	
11011 00000 75000	
MODIFIED LEVEL "D" PROFECTION	·
ROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	
	·
SPECIAL NOTES.	
-	
TCMCRROWS EXPECTATIONS: 819 MADISON, 1009 MADISON, 1231	MADTON O
819 MADESON, ROOTHIES	

BY WONDY REDVEDIT TITLE STATE ONLY

	DATE		<i> </i>	-2·91		<del></del> .
	OAY	S	2	\\ \\ \	TH Z	5
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Bron   Sun	Clear	X	Ren	Snow
COE PROJECT MANGER _ TORRY BUCKUHZ	TEMP	τοπ Χ	32:50	50-70	70-45	ه که
PROJECT NE TETRAL PROJECT NE T	W#40	94	¥00¥ ✓	нфл	Reach 19	M NO.
JOB NO	HUNIOTTY	20	X	HUTTO	15	1
					'AY	
SUB-CONTRACTORS ON SITE:	der D	1				
Woodwood-Chyde	C0113-17	- کامت			•	
ECUIPMENT ON SITE.						
HAR K.t.		<u> </u>		<u> </u>		
					· · · · · ·	
WORK PERFORMED (INCLUDING SAMPLING):	01 100	ゝ				
Santen - Isaa o	) .	)				
	Total		2	,		
				<u> </u>		
Leak Duplicates - Iona, 1002	(3)	( <del>+0+</del> )	<u> </u>			
Lead Quality - Iswa 1002	(3) (	to t.	7			
Lead Quality - Iswa 100d						
-		•				
					1~	
Decorded Engineent Abandoned berna Sampled I Aw &	5 bo 20	سحك	TA.	200 t	724	<u> </u>
Abandoned born	#A~	200	# L			
Sampled I And I	· 6 +1 +	·				

			(Communion Show
PROJECT.	Nu/Tancero	nE⊃ORTHO _	1985-1
.0810.	NU/TORRESP 87MC114V	OUTE_	12-2-91
OUALITY CONT	POL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)		
<b> </b>			•
HEALTH AND SA	FETY LEVELS AND ACTIVITIES.		
	Modified level D		
	Desend expent i per	some	
· · · · · · · · · · · · · · · · · · ·	0,	·	
9909151165146		<del></del>	
PHOBLEMS ENCO	DUNTERED/CORRECTION ACTION TAKEN:	•	
······································			
	·		
PECIAL NOTES.			
		<del> </del>	
CMCAROWS EXP	ECTATIONS:		
		230 1234	1235 1304
	913 1408	,	, ' '
	Grand -	1327 925	1732 1304

BY the Staff Scientist

## (SAMPLE FORMAT)

	DATE 12 2 - 91
	OAY S X Y
A-E DAILY QUALITY CONTROL REPORT	WEATHER SUT COM COUNTS From XX
	TEMP 10 32 12-30 5 70-45 45 40
PROJECT NO TARA CURP	WIND 24 MASSW HAST (MISSIFE)
108 NO87712774	HULLIOTY OT LACON X
CONTRACT NO	-10
SUB-CONTRACTORS ON SITE:  Layre was term	D-11/179
•	
EQUIPMENT ON SITE. CME-75 de.11	Rig. stewn cleaner
grout nixer. Water took	trailer
WORK PERFORMED (INCLUDING SAMPLING);	11/1 - 12001 de Pad
Union Laborer, 123	talled concrete pad
1 set bunger posts of	
103-D pad 27 2" die x 3' bigh	orth 2' in the
ground	
- d-illed a samples in	the Corice strys
delled & sample	6 BUR METER
ransing on dipth 4	7
News of to date-nia	of pattery chips
Over buiden thickines	- natural restrict soil
s fill material out	
Collected 3 soil samp	les for Anslytical
Cultication 2 300 serve	to be analyzed for
sampling samples TCLP fital de	id.
- surplis collected from	VE-0002 (0-21
	06 -000
	VE-0005 (4-6)
	SHEET OF

1 Oct 90	(Communion Shows)
жиест	89 NC/7 2120-P MOTHED 12-2-91
08100	84 MC114V OUTF
OUALITY CONTROL AC	TIVITIES (INCLUDING FIELD CALIBRATIONS)
HEALTH AND SAFETY L	EVELS AND ACTIVITIES.
mode find	Level - D.
PROPIETAS ENCOUNTI	REDICORRECTION ACTION TAKEN
Action: 50	fiched to manual drive hanner.
- Ranyle.	pot in Rain soits I was dress.  properly
Action.	pot in Kain soil
	property
COCCUM MOTES:	
SPECIAL NOTES.	
TCMCRROWS EXPEC	ATIONS:
<i>C</i> .	
venice	Alleys.  1'y a sample our 7 Locations.
w.//	Ty a sample our

BY Jane Dans TIME Geologist

	DATE		<u>/2 -</u>	2-91		
4	- OAY	S	ž [	"	ਮਿ	S
A-E DAILY QUALITY CONTROL REPORT	WEATHER	8/çri Sun	Char	Overcom	Ren	Snow
COE PROJECT MANGER TORCY BUCKOHZ	TEMP	3	32:50	\$0-70	70-45	
PROJECT_NLTTeracoop	WINO	Stat	M00=	Han	19	M NO.
JOB NO	HUMIDITY	Or	×	Humb	15	1
SUB-CONTRACTORS ON SITE:						
Woodwood-Ckyde	Consult	bants	·	·		
EQUIPMENT ON SITE.						
the kit.			<del></del>			
WORK PERFORMED (INCLUDING SAMPLING):						
Soupled - Iona 81	1 100	<u>ک</u>				
	Total		12	,		
		4.	-			
Leab Duplicates - Iowa, 1002	(3)	( <del>to-</del>	<u></u>			_
				<u>.</u>		
Lead Quality - Iswa 1002	(3) (	tot	7			
		•				
Decorded equipment.	= person	nel	DA	500 £	2	2
Abandoned born	1 # 1	200:	#			$\exists$
Samp 4 a 1 1700 10	4	<u> </u>				
	<u> </u>					

	A. James	(Communion Show
PROJECT.		
-08 NO	87M<114V	OUTE /2-2-91
QUALITY CONTR	OL ACTIVITIES (INCLUDING FIELD CALIBRATK	ONSI
	•	
		·
ļ		
		•
HEALTH AND SAFE	ETY LEVELS AND ACTIVITIES.	· · · · · · · · · · · · · · · · · · ·
<del></del>	Modified level D.	· · · · · · · · · · · · · · · · · · ·
	December egropmet i	personel.
***************************************		
PROBLEMS ENCOL	INTERED/CORRECTION ACTION TAKEN:	
**************************************		
PECIAL NOTES.		
	~	
DMCRROWS EXPE	CTATIONS:	
<del></del>	Sample - Fam	7408
-	913,	1408
	Gran	1-1327, 925

BY San Dled TITE Staff Scientist

Figure 2 (Continued)

	DATE		12-	3-9		<del></del>
	- OAY	S	- X	. "	h F	S
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Bright Sun	Chear	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Ren	Snow
COE PROJECT HANGER Terry Buchetlz	TEMP	To H	32:20	50-70	70-65	45 100
PROJECT NAMER PROJECT NETTERNAMENTE	WINO	<b>S</b> M	**	Нфп	Reco	M NO.
JOB NO. 89MC114V	HUMIDITY	Ογ	学	HATE	20-	1
SUB-CONTRACTORS ON SITE:	Carsul	I_to				
Woodward-Clyde	Consil	104.5				
EQUIPMENT ON SITE.						
HAG KIT						
WORK PERFORMED (INCLUDING SAMPLING):	1235.	12.3	4 1	230	103	
Semple X - Arma-	11 000	1911		29		
	or lead	چهورس	10.			
Lead Quality - Inwa - 1	24- (	3 T +	wta			
Lead Wall Tu - Liter Andre	1029-	(2	くか	Hil		
TA-SINGLE	<del></del>					
					·	
·						
Egyport & Personnel de	1000el 142.	IA	<u>~ &lt;</u>	g-#6		
Abadened begins It	IN SUPT	<u>+7.</u>				
Sould FAW S.	#1.					
				eet.	1 SE	_ಫ

		REPORT NO	20-2
RIJECT. ——	NLThricorp		12-3-91
O8 NO	NL/1000p 89Mc114V		
QUALITY CONTR	IOL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)		
•		:	
	CICLS AND ACTIVITIES.		
HEALTH AND SA	FETY LEVELS AND ACTIVITIES.		
	Modified level D. Decembed equipment à	personali	
	( See Brosser )		
PROBLEMS ENC	OUNTERED/CORRECTION ACTION TAKEN:		
			·
· · · · · · · · · · · · · · · · · · ·			
SPECIAL NOTES			
TOUGROWS	EXPECTATIONS:	0.0	dale .
TOMORAGUS	Sample - Wook	in office	
	10 44	he C.	

BY Last Scientist

	DATE	_/_	13171	<u></u>		
	· OAY	S	- X	7 **	भिद	S
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Bright Sun	Char	Overced ×	Ren	Srow ×
COE PROJECT MANAGER <u>TEXEN BUCKOUTZ</u>	TEMP WINO	<del></del>	32-50 Moorr	**	70-45 Page	n No.
08 NO. 89 MC 114V	HUMIDITY	Оу	X	Humid	20	
SUB-CONTRACTORS ON SITE:						
WOODWARD - CLYDE CONSULTANTS	HAB TEAM	2				
EQUIPMENT ON SITE.						
MAB KIT						
WORK PERFORMED (INCLUDING SAMPLING):						
· SAMPLED			~~			
1115 REYNOLDS, 1706 KENNEDY,	1230 MANT	<u>97 , 2</u> - אמ	1853	ED AN	e0312	215
1115 REMNOLOS, 1009 MENTSON,						
TAMEN 1. TOTAL LOSS SAMPLES ES	чн (тота S	74)		:		
· CIA MARMAI						
· 3 LEAD QUALTTY ASSURANCE SAN	nples each	(3	TOTA			
· ALL SAMPLING DONE TAN SOO!						
"AL SAMPLE LABRITUG DAW SOF 5						
" ALL STATES PECON DONE TOWN SUP	6					
' ML BORONG PRONORMENT DONE TO	U 50 F T	•	<del>-</del>			
		<del> </del>				
					-F	

			AEPORT NO. 89 MG ILLIV
DECT.	NL/THRACORP		OUTE 12/3/91
. NO	89 mC IIHV		
3100	CONTROL ACTIVITIES (INCI	LUDING FIELD CALIBRATION	ONS)
JALITY	CONTROL ACTIVITIES		
		·	
			•
			·
EX. TH	MO SAFETY LEVELS AND	ACTIVITIES.	
Olo M	AND SAFETY LEVELS AND	ROTECTION	
TriOI L			
20001	MS ENCOUNTERED/CORRE	ECTION ACTION TAKÈN:	
POBLE	MS ENCOUNTERED/CORRE	SCTION ACTION TAKĖN:	•
POBLE	MS ENCOUNTERED/CORRE	ECTION ACTION TAKEN:	·
POBLE	MS ENCOUNTERED/CORRE	ECTION ACTION TAKEN:	
ROBLE	MS ENCOUNTERED/CORRE	ECTION ACTION TAKEN:	
ROBLE	MS ENCOUNTERED/CORRE	ECTION ACTION TAKEN:	
ROBLE	MS ENCOUNTERED/CORRE	ECTION ACTION TAKEN:	
ROBLE	MS ENCOUNTERED/CORRE	ECTION ACTION TAKEN:	
		ECTION ACTION TAKEN:	
	MS ENCOUNTERED/CORRE	ECTION ACTION TAKEN:	
		ECTION ACTION TAKEN:	
		ECTION ACTION TAKÈN:	
SPECIA	L NOTES.	ECTION ACTION TAKEN:	
SPECIA	NOTES.		
SPECIA	NOTES.		man surve
SPECIA	ROWS EXPECTATIONS:		and the second
SPECIA	NOTES.		more serve
SPECIA	ROWS EXPECTATIONS:		Como servico

## (SAMPLE FORMAT)

	DATE
	DAY S W X W E
A-E DAILY QUALITY CONTROL REPORT	WEATHER SUN Char Owner Ram Show
	TEMP TO 22 12:50 50:70 70-45 65:00
PROJECT NL TORACORP	WIND SEE MOON POT FRANCE PO
108 NO. 89 MC/14-V	HUMIOTTY DY MOSE HUTTO
CONTRACT NO	us dans Dayling Cu,
SUB-CONTRACTORS ON SITE: Layne-	Western Drilling Cu.
EQUIPMENT ON SITE. CME-75 0	I-Il Rigteen cleaner
grout mixer. Nate	- fank.
	/ 10
WORK PERFORMED MICLUDING SAMPLINGS: - Drill	un the Venice Alloys.
buring Lucations . al	115 The CARRIVE OUT
VE-0007, VE-0008, VE-00	0014 - VE-0015
VE-0012, VE-0013, VE-	NE-00/8.
VE-0016, VE-0017,	rangles for TCLP Lead
Collected 6 soil 3	sample for Tecp coad
	for TCLP-Lead
	& (4-6') for TCLP Total
- C. //cetel sample VE-000	9 (0-2') AN 7EEF ZEE
cullecter deplicate VE-00	9 (U-2) for TCCP Life (
collected sample ve-00	11 (0-2') for TCLP Lend sto
Collected sample VE-001.	3 (0-2') for TCLP Zead,
Collected sample UE - 001.	5 (2-9) for 7 cct 2001
- 1/2 day OA sample UE - OOL	13 (2-4) 100 / 221
Collected sample VE -00,	17 (0-2') for TCLP Cod
	SIKET 1 J J

NZ	89MC114-V		(NITRO)	-3-9/
ACT.	DO MC114-V		OUTE	
O8 NO	8771017	7.7.045		
	BELD CA	LIBRATIONSI		
	Shipped to	<del>, , , , , , , , , , , , , , , , , , , </del>	1112220	2011
- 100	Mecten Que	1xx 13	2000	TCCP CON
21 1/2	grum U	1E-0015	<del></del>	20
J. J. J. A.	spiered 70	the curp	07 670	, , ,
974	We braske.			
OMIN	8. 10.0			
•				=
HEALTH AND SAFETY L	EVELS AND ACTIVITIES.    Level - D   bouts, so-green	NAM hat	safety	g/asser.
mode Siec	1 Level-D	1 him	adde per	prese grow
steel foed	60075, 50-3150	13/4/2		
·				
COCOL ELIS ENCOLINTI	EREDICORRECTION ACTION T	AKEN.		
PHOBLEMS ENCOURT				
	None,			
		•		
SPECIAL NOTES.				
			1. 11.	<i>(</i>
TCMCRROWS EXPEC	TATIONS: UI	Cumplets	1/1/1/49	
2	doction the	complete venice	111731	41 20
	take measure men	15 fram 1	bench mark	
		MAPSI		
2002	A burings on			
		<u> </u>		

By long Davers TITE Sev/39, 27.

(SAMPLE FO	(SAMPLE FORMAT)		ER 1110	0-1-263 90
	37AO		- 4,-	9/
A-E DAILY QUALITY CONTROL REPORT	WEATHER	34	0-0-	Am Snow
COE PROJECT MANGER  PROJECT NL/TARACORP  JOB NO. 89 MC/14 V	чизт Ом Утојији	Su Moon	Нол	70-45 45 40 Recort No.
SUB-CONTRACTORS ON SITE: 289 ne -			11,-3	Cu.
EQUIPMENT ON SITE. CME-75- d-1				
steem cleaser.			<u> </u>	
WORK PERFORMED (INCLUDING SAMPLING): COMP/	espelis	the d	1454 7	two
SLough Risd College TCLP Loss	<i></i>	1 200	10 4	•-
- Ligar western clamed up	- Demo	bed		
- made sketches of the story Road for st. f south of Na.	Aller	Z-10'	e <u>F</u>	<u>21</u>
- Picked up SCT meter solutions for 1211 A	1 0		ivs	

SHEET_

Ĺ

ma icct	NL/7	TARACURP	R	EDORT NO	12-1-01
~~ JEC !	498	TARACURP 10 1190		DATE	12-4-91
CONTINUE CONTI	POLACTIVITIES (INC	CLUDING FIELD CALI	BRATIONS)		
OUALITY CONT	HOC ACTIVITIES			·	
		None			
•					
<u> </u>				<u> </u>	
	AFETY LEVELS AND	ACTIVITIES.			in a liea
HEALTH AND SA	Li Cial Les	ACTIVITIES.	ang d-	Ming 5	
775	ruities.				<u> </u>
2671	0177				
ODOG! EUS EN	COUNTERED/CORR	ECTION ACTION TAI	(ÉN:	•	
PROBLEMS CIT					
	V.on	٤٠			
<u> </u>	<u> </u>				
·					•
				-dada	
SPECIAL NOTE	S. Arrange	a for C.	1490 - WES	1 1000	100
Bri				<i>y</i>	
	wel	/ MW-19	03-15		
					well
TOMORROWS	EXPECTATIONS:	SURG	er De	100000	us lety .
	14	-103-D	241	101	
	whe	re201193			

BY Jage Danging Genleyist.

	DATE		12-	5-9	/	<b></b> -
	- 044	S	1	"	X F	S
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Bright Sun	°X	Overcom	Asa	Snow
·	TEMP	To II	X X:30	50-70	70-45	
PROJECT MANAGER  PROJECT NL TARACORP  108 NO	<b>ММО</b> УПОІМИН		Hoose X	Humig	Reco	n ro.
SUB-CONTRACTORS ON SITE: 23908 - 6	Jeste-n					
SUB-CONTRACTORS ON SITE: 23908 - C						
EQUIPMENT ON SITE. Steam c/e	21e-, 4	1240	- 1	414		
surga block, contrifu	51/ 00	MP				
WORK PERFORMED (INCLUDING SAMPLING):			,			
work performed (including sampling):  ' Set-up	To d	evel	م ب	MW.	/03	-0
- Took intest wat	1- 20001		10 1	e re	7000	1
- Instally surged	well	W.F.	4 .	ruge	61	-24
- Journa down plant	'is hose	<i>;</i> ~	vell	· ~ 0		
List and remove	water		FI	1.0 -	ste	
1 1 2 5	6/1/1					
- periodically coll	ected u	12/11	- de	12/14		
readings such as	7',	Ph	700	6,11.	<u> </u>	
readings such as  Conductionty, ador, app	A-dace.	etc				
		//			111	
- turned pump off - re-	rargica	West				
Access 1 4	1	· v r /6		201	(2)	
- Ran (2) TW 1.40 +U0 1/2-3/4 hr to clean up the	cveles	/				
+U0 1/2 1/4	water	fru	. 1	he w	<u>e 4.</u>	
to citer of						
			Ç 1-	€ET	<u> </u>	<u>.</u>
			٠.			-

	ITAPACURP		REPORT NO	
ROJECT. NL	MANCE		DITE_	12-5-91
08 NO	89 MC/140			
		TELD CALIBRATIONS	0:/	
caliberted	ph - metc-		-	
	set meter	- YSZ	11. 14.	meter
U	ider Ouslity	netr-	7.077	
	144			
		meter)		
				·
HEALTH AND SAFETY	LEVELS AND ACTIVITIE	s		
prodes	fod Level	<u>- D</u>		
		OTON TAVÉM		
PROBLEMS ENCOUNT	EREDICORRECTION A	Je- do es	lesi-up	
0 - 11 04	F. at well	1374-	41 54-48	block
Action.	Alternat	46,00040	it the	creanfaul
mure J	uction hoss			creantenel
during	punping 1 Bailer	1) 10-4	well.	
U)c.	Bailer	70		
	All the w	1ter quality	para met	him did
SPECIAL NOTES.	181 With	Lime.		
57 2601	121 6777			
		ere e		
		chick we	11 to s	er it
TOMORROWS EXPE	tations: With	chered of	9	
	1871- 723			
				·
·				or staff

	DATE		12 - :	5-91		
	- 044	S		~	M 7	S
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Broni Sun	  X	Overcome	Ren	Snow
	TEMP	To 32	77.50	50-70	70-45	<b>45</b> 40
COE PROJECT HANGER Bycholtz	WIND	Sul	1400	НфП	Reco	n NO.
PROJECT NL/TokeDCP  JOB NO. 89/C1141/	НОМИН	Oy	文	Humb	21	-1
CONTRACT NO CO 2						
SUB-CONTRACTORS ON SITE:				<del></del>		
	le Consi	) (ta	<u> </u>			
1					,	
EQUIPMENT ON SITE.		-				
THO E.T.						
WORK PERFORMED (INCLUDING SAMPLING):						
	807 80	8	811	820	90	4,_
Sompled - Granz	7.	_ /	)	<del></del>		/
Ed-500-1717	1707-6	only				
Total	lead -	48		15.		
		<del>-7</del>		·		
Lead Quality - Grand 808-	-(3) +	sta [		<del></del>		
					•	
			<del></del>			
		200	II	=A w	Sm=	¥6.
Abadoned boding	-Air Soa	#7	<u> </u>		7	
Abadoned boling	144	<del>.71</del>				
Sampled the say						
	<u></u>					
			٧.	€ET /	J.F	9

	11 17:00:00	_ AEPORT NO	1-1
名ンECT	NETTRACTO	DATE	12-5-91
08 NO	NL/Taracorp 89MC1141		
QUALITY CONTE	ROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS	51	
			•
•			
		·	_
HEALTH AND SA	FETY LEVELS AND ACTIVITIES.		
	Modified level D.	+ 5 brave	,
	Decorded Equipme	1	
	ACTION TAKEN:		
PROBLEMS ENC	COUNTERED/CORRECTION ACTION TAKEN:	•	
<u> </u>			
SPECIAL NOTES	9		
SPECIAL NOTE.	-		<u> </u>
TCMCRROWS	EXPECTATIONS:	- 204	× 2023
	Sample - Br	140 - 2014/	2018
		Ma - 4814	2508
	U	9210 T - 4215	12617
		43.10	1

BY Des TIME Stiff Scientist

(Commution Sheet)

	DATE	12	2/5	191		
	- OAY	S		1"1	7	S
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Brçri Sun	×	Overage	<u> </u>	Snow
	TEMP	To 32	22.50	50-70	70-45	45 10
PROJECT MANGER TESTEN BUCKBUTZ	W <b>!NO</b>	S24	Moder	X		M NO.
108 NO87MC//4/V	HUMIDITY	Ογ	Hoose X	Huma	121-	2
CONTRACT NO 002/						
SUB-CONTRACTORS ON SITE:				<del></del>		<del>.                                      </del>
WOODWARD - CLYDE CONSULTANTS	HAB TEAN	2 4 6	<u> </u>			
ECUIPMENT ON SITE.						
HAB KIT						
TO THE PROPERTY OF THE PROPERT						
WORK PERFORMED (INCLUDING SAMPLING):  *SAMPLED 2039 STATE, 1705 ST	DIE . 2000	DEL	nag.	2038		
BENTON 2125 BENTON, 091	5 NIPORT	VG-KL	ws,	1247		
NIEDLENG MMS		<u> </u>				
CONDUCTE ENGLY	10 TAL 42)					
· 2039 more 2000 DAMES 2038	* BENTUN !	247	NTE	peing	HAUS	
· 3 & LEND QUATTY PASHENCE	EACH (TO THE	12)				
· 1247 WIEDRONGHAUS						
· 3 TOTAL LEAD DUPLITATES (TO	792_3)					
· ALL SAMPITUGI DONE TAN SOO!						
" ALL SAMPLE LABOTHG DINE THE SDE	5					
ALL BECON DONE TAN SOP CO						
AL BURTUG ABANDONMENT THE SUP 7						
				EET /	7.5	

PROJECT. NL / TORACORP

TOMORROWS EXPECTATIONS:

QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)

DBNO. 89 MC 1141

(Communion Sheet)
15191

HEALTH AND SAFETY LEVELS AND ACTIVITIES.
MODIFIED LEVEL "D" PROTECTION
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAXEN:
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAXEN:  130.3 MADESON - A. GRANE PROVING LOT -NO TO SOT
- CONLOROT SERVE
2038 BONTON - BACKYARD TO TRUED AND COMENT - SAMPLE TOWER ONLY
IN FRONT YMRD
SPECIAL NOTES.
of Councillation and the Councillation and t

OLDIE (1642, 1646, 1647, 1648,) SPRICE (1614, 1602)

NTEDRINGUAS (807, 830) FDTSON (1721, 1729,

BY WENCY RETNANT TITE STATE BUG

	DATE 12/6/91
	- DAY S M M TH E S
A-E DAILY QUALITY CONTROL REPORT	WEATHER Sun   Chair Overcount Resn   Snow
COE PROJECT MANGER Terry Buchholz PROJECT NL/Taracorp Superfund Site JOB NO. 87MC 114V	TEMP To 12 12:50 50-70 70-85 85 to WINO Still Moont Home Recort No.
CONTRACT NO 0021	HUMIOTTY DY MOOR HUMB
SUB-CONTRACTORS ON SITE:	
Layne - Western Drilling Co.	
1	
ECUIPMENT ON SITE. CME - 75 Drill Rigg	Steam Cleaner, surge black
pH meter, conductivity, temperature,	and turbidity moter, water level
indicator, centritugal Dump and Subs	nersible pump (electric)
WORK PERFORMED (INCLUDING SAMPLING):  Development of Well 103-	D. Name has been changed
DEUCTOPMENT OF COURT	,
to Well # 103-91	
Took water levels	
Surge well with surge block. Install submersible pump at 31	In CFP by hand.
Start pumping at 4 gal per min	for 20 min
	min. turbidity and water level measurements
Took pH, conductivity, temperature,	turbidity and water jever mes
every 5 minutes.	
Pumped a total & of 220	gallons from well during the
da	,
	SHEET OF COL

All Horocorp Superfund Site	PORT NO
DRING. NL Maracorp Superfund Site BOND. SAMCIAL	DATE 12/6/91
OBNO. SAMCINA	
CHALLY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS	1. 1. 1.
Producted Before and After a Calibrations during a temperature, and turbidity. See Calibration Fig.	old Log Book.
HEALTH AND SAFETY LEVELS AND ACTIVITIES.	
m / (C + 1) = 1	
Decorned Equipment and Personnel	
PROBLEMS ENCOUNTEREDICORRECTION ACTION TAKEN:	· 11 Due P. Hat
PROBLEMS ENCOUNTEREDICORRECTION ACTION TAKEN:  Prior to pumping well to develop, was inform	ed by over sible
Prior to pumping well to sovelop, was intermed the SOP says that we arrow were suppose to under the Soft says that we arrow Taken: Soutched	se a sem centritugal
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	pun /
lift pump to electric submersible pump.	
SPECIAL NOTES.	
TCMCRROWS EXPECTATIONS:	
Finish devolupment	

BY Cystia Pavella

TINE Amit Project Engineer

	OATE		12-	6-91		<del></del>			
	- OAY	S	4 7	"	h X	S			
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Bright Sun	Cher	X	Ren	Snow			
COE PROJECT MANGER Terry Bucholtz	TEMP	To 22	H, SO	\$2.70	70-45	<b>65</b> 40			
PROJECT WANGER NE /TOCK OF	WINO	<b>\$24</b>	***	НфП	Reco	XT NO.			
108 NO. 89MC114V	HUMIDITY	Ory	×	Huma	99-	1			
CONTRACT NO		<del>-</del>							
SUB-CONTRACTORS ON SITE:			سه	<del></del>		<del></del>			
Woodward-C	ude ca	بالدوم	1011	<u> </u>					
EQUIPMENT ON SITE.									
HAG KIT									
WORK PERFORMED INCLUDING SAMPLINGI:									
Sapled - By-100-2023, 2014									
4. aut st 2504 2508 2510									
				<del>00, 1</del>					
Delas - 1732 26/2									
Jefferson-2002 Total lead - GO									
Lead Dup - 2504 W. 3	10th 5t.	(3	27.0	tola	1)				
		· · · ·							
Matrix Spike Dup 25040	, २०स	<u>st.                                    </u>	(13)	Cto1	a()				
		1 /	=,-		<u> </u>				
Dearned eypipent:	proper	400	-/1w	263	64	-			
Abandant to FAN Sof #7.									
Supled JAW S+++1									
·									
		<del></del>				$\neg \neg$			
			Clad	ft /	S€ ·	<u>~</u>			

DUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)  HE. TH AND SAFETY LEVELS AND ACTIVITIES.  MUCH FIELD (2011).  PROBLEMS ENCOUNTEREDICORRECTION ACTION TAKEN:  PECIAL NOTES.  CMCRROW'S EXPECTATIONS:	. PROJECT.	NL/Timecorp	
HE TH AND SAFETY LEVELS AND ACTIVITIES.  MUCLIFICATION  PROBLEMS ENCOUNTEREDICORRECTION ACTION TAKEN:  PECIAL MOTES.  CMCRROWS EXPECTATIONS:	-08 NO	89MC114V	DUTE 12.6-91
Much fiel leel D.  Decomed entirement of pecsage (  PROBLEMS ENCOUNTERED/COARECTION ACTION TAKEN:  PECIAL NOTES.  CMCRROW'S EXPECTATIONS:	OUALITY CONTR	OL ACTIVITIES (INCLUDING FIELD CALIBRATIC	WS)
Much fiel leel D.  Decomed entirement of pecsage (  PROBLEMS ENCOUNTERED/COARECTION ACTION TAKEN:  PECIAL NOTES.  CMCRROW'S EXPECTATIONS:			
Much fiel leel D.  Decomed entirement of pecsage (  PROBLEMS ENCOUNTERED/COARECTION ACTION TAKEN:  PECIAL NOTES.  CMCRROW'S EXPECTATIONS:			
Much fiel leel D.  Decomed entirement of pecsage (  PROBLEMS ENCOUNTERED/COARECTION ACTION TAKEN:  PECIAL NOTES.  CMCRROW'S EXPECTATIONS:			
Much fiel leel D.  Decomed entirement of pecsage (  PROBLEMS ENCOUNTERED/COARECTION ACTION TAKEN:  PECIAL NOTES.  CMCRROW'S EXPECTATIONS:			
Muchified Isel D.  Decomed entirement of pecsage (  PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:  PECIAL NOTES.  CMCRROW'S EXPECTATIONS:			
Much fiel leel D.  Decomed entirement of pecsage (  PROBLEMS ENCOUNTERED/COARECTION ACTION TAKEN:  PECIAL NOTES.  CMCRROW'S EXPECTATIONS:			
Much fiel leel D.  Decomed entirement of pecsage (  PROBLEMS ENCOUNTERED/COARECTION ACTION TAKEN:  PECIAL NOTES.  CMCRROW'S EXPECTATIONS:	HE TH AND CAE	STV I SVSI S AND ACTIVITIES	
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:  PECIAL NOTES.  CMCRROWS EXPECTATIONS:		والمرابع والم	
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:  PECIAL NOTES.  CMCRROW'S EXPECTATIONS:			ent & pecsennel
PECIAL NOTES.  CMORROWS EXPECTATIONS:		7 .	' 6
PECIAL NOTES.  CMORROWS EXPECTATIONS:	<del></del>		
PECIAL NOTES.  CMCRROWS EXPECTATIONS:	PROBLEMS ENCO	INTEREDICORRECTION ACTION TAKEN:	
CMCRROW'S EXPECTATIONS:			
CMCRROW'S EXPECTATIONS:			
CMCRROW'S EXPECTATIONS:			·
CMCRROW'S EXPECTATIONS:			
CMCRROW'S EXPECTATIONS:	<del></del>		
CMCRROW'S EXPECTATIONS:			
	PECIAL NOTES.		
	***	-	
	MORROWS EXP	ECTATIONS:	
sugge -		Suple-	
Java 12.38 148		Jan 12.18	148
Gand = 1327 924	······································	5md = 1327	Sac
(25 - 811 /0/3/202 My -900 (1011) -1929	<del></del>	Ly - 8/1 /0/3	10-1929
/ Cleulad in	<del></del>	196 - 2007	TRUIA

Figure 2 (Continued)

IITE Staff Scientist

	DATE	121	619	·/		
	OAY	S	<u> </u>	"	TH X	S
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Brçrz Sun	Cum X	0	Ren	Snow
OE PROJECT HANGER TERLY BUCHOLTZ	TEMP	To 22	32.50	X 50-70	70-45	L
ROJECT NL/THEN CORP	WINO	Sal	X	HOT		M NO.
08 NO. 89MC114V	HUMIDITY	Ογ	X	Huid	22	- <u>2</u>
ONTRACT NO				-		
SUB-CONTRACTORS ON SITE:	1100		# 2			· <u>· · · · · · · · · · · · · · · · · · </u>
L'000WARD-CLYDE CONSULTANTS	1465 7 6	<u> </u>				
EQUIPMENT ON SITE.						
HAB KIT						
		<del></del>				
YORK PERFORMED (INCLUDING SAMPLING):	11.5	2 9	Dayl	E IIa		
SPENCE, 0807 VIEDENIGHAUS, 08	30 NA	nen	DEHAL	<u> </u>		
· la Sameirs de Tatas I FRO FRIM	(TDTA)	36)		•		
· ALL SAMPITUG DONE TOWN SOF !						
· AL SIMPLE LABORING TON SOF 5	<u> </u>			: 		
· ALL DECON DONE TON SOP 6						
" ALL BORONG ARANDENMENT THE SDE	7					
	• .					
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						$\neg$
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1 Oct 90	(Communition Sheet)
	AEPORT NO. 22-Z
ROJECT. NL/TARACORP	DATE 12/6/91
712 89MC/14V	
DUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	
2022.11.	
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	·
HEALTH AND SAFETY LEVELS AND ACTIVITIES.	
HEALTH AND SAFETY LEVELS AND ACTIVITIES.  IN OUTER 1 FOR "D" PROTECTION	·
MODERA I EVE D PROSE	
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	•
SAF PARA BARK	
	·
SPECIAL NOTES.	
TCMCRROWS EXPECTATIONS:	OMER JOBS.
WER AND RWS WOL BE WOUND ON	

	OATE	lé	191	191		
	· DAY	S	X		H	S
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Bright Sun	°Z	Overcome	Ren	Snow
COE PROJECT HANGER Terry Buchhole	TEMP	To 32	7,20	50-70	70-es	ص که
PROJECT NL/ / AVACOPD SUPERTURA SVIE	WINO	<b>S</b> 21	**	HOTE	Pecc	21 NO.
108 NO. 89 MC 114V CONTRACT NO 0021	HUMINTY	X	Moder			<u>_</u>
SUB-CONTRACTORS ON SITE:						
Layore-Western Drilling Co.						
1	tom Cleans	٠, ٥	Gurae	block	, pH	
meter, conductivity, temperature, and t	farbidity M	eter,	wat	er leur	el in	licato
-containing Dump CFP blectric submer	sible pump					
WORK PERFORMED (NICLUOING SAMPLING):  Development of Well 103-91						
Took water level and total dept	<i>b</i>					
Surge well with 10 ft, 1.5 in-die	emeter rox	1 ho	ked	to a	rice li	ne
cable on well.					CFP.	
Took sample.	1 ft. Pw	20 4	ell a	+ 7-	19	90/5
Der min Took samples strong at 10 n	in interva		Meas		<u>.                                      </u>	<del></del>
pH, temp., conductivity, and to	urbidity a	nd w	ter !	evel.		
Prompeces Tuen pump off. Surge	w/ surge	block	for	5 min.		
Planpett Tam parage stri	(/ //		$\sim \mathcal{L}$			-túp
1/1 / 20	s than 10 th - no fill	1 7	or re	sichure	of	
1 / 111 /22 42 15	clear.					
1 h 1/ sancidered developed.						
Purped a total of 815 gal of	water toda	4-				
Out to the state of the state o	s by han	d to	cle	2/1 OLI	t any	
possible contamination from pumpe				€ET/	JF 9	<b>a</b>
			2			

PRIJECT. NL/Taracorp Superfund Site	ICOMINUATION Show
-08NO. 89MC/14V	DATE 12/9/9/
QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS	
-Laune - Western CFP	
	during day for oth, conductive
Conducted Before and After field Calibrations temperature, and turbidity. See Calibration	Field Los Book.
HEALTH AND SAFETY LEVELS AND ACTIVITIES.	
Modified Level "D"	
Decorned Equipment and Personnel	
( '	
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	
Home CFP After well has been distur	bed by score beiling or
removing pump: Well unter becomes cloudy.	Had developed well for over
8 hours. Contacted USACE neologist, discu	used problem. Decited due
to the fine sitt and clays within the natural	formation, the well may
be considered developed.	·_
PECIAL NOTES.	
CMCRROWS EXPECTATIONS:	
None, Released Rig Coew today.	

BY Cyrtin Parthe TITE Assist Pry Engineer

	DATE		<u>/ユ -</u>	- 9-9		<b></b>	
·	· OAY	S	χĹ	\w	HIE	S	
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Brone Sun	Cheer	o-gr	Ran	Snow	
COE PROJECT MANGER Terry Bucholie	TEMP	To 32	7.50	50-70	70-45	45 10	
PROJECTNL Taradap	WINO	S24	7	75	Reco	M NO.	
208 NO 89M CILHIV	HUMIDITY	Oy	大	Hund	<i>≥</i> 3-	-I	
SUB-CONTRACTORS ON SITE:							
Weyland - Ch	de Co	ار ر	رامه				
	3						
ECUIPMENT ON SITE.			<del></del>				
MAB 2.+							
WORK PERFORMED (INCLUDING SAMPLING):							
Sompled - Mc Ca	mbrigde	سار	aslu	nater	-8	11	
Wechnoto 1013, Warmin 1203 " Frum 1218	Foun	Kyo	8,6		19		
Merzodocion las, 5tale 84, Grand	1321	101-	101	0	7		
		- 9	———	:		X	
Leed Die - Mccambridge (3) Warfing (3) Frue 408(3)							
Merchante 618 (6) Clevel 1929	(3) -	721	٢ ـ	<u>-/d</u>	==-		
	9.,		<b>-</b>				
I sed Quality - McContridue (s) W.	shirter (	(3) (	rapho	ا رفد	212	22,	
West - 1703 (3) Four 1238 (3) Four	1408	3).A	VIC	cloci	<del>(2</del> )		
Mordel (2) State 814 (3), Godand 138	104 104	<u>Cleve</u>	اعط	1927 L	<u> </u>		
Leed Matrix Spike - Mandacia (2		F 814	1/3)	-tot	41 (	0	
•	77						
end hatrix Spike Dry - Mer docio	<u>~(2)</u>	State	- 31	4(3)			
	· 1 c	-/0	tu.	-6			
Abadored bodin = Air Sip #7.	MAN 3	77	-				
Sepled FAW Sep#1							
						-	
			6.6	· · ·	~~		

		OPORT NO	<del>dd-4</del>
ROJECT	NL/ Taracop	^C G	12-9-71
08 NO	NL/ Taracop 89MC 114V		
QUALITY CONT	TROL ACTIVITIES (INCLUDING FIELD CALIBRA	TIONS)	
00.0			
			•
•			
HENITH AND S	WETY LEVELS AND ACTIVITIES.		
	Mudified level D	at a necessary	
	Decement Equipa	Control of the contro	
			·
	COUNTERED/CORRECTION ACTION TAKEN:		
PROBLEMS EN	COUNTEREU/CORNECTION	•	
<del></del>			
			·
SPECIAL NOT	FS.		
SPECIAL NOT	-		
TCMCRROWS	EXPECTATIONS:	Shaffer Rd & A	Aireauci tue
<u> </u>	Sample -	Shotter Rd + 1	1. 3, 12

BY Star TITLE 5 toff Scientist

(Communion Sheet)

ER 1110-1-543 1 Oct 90

	OATE		]_	10-9	<u> </u>	
,	YAO	S	4	/ "	THIF	S
A-E DAILY QUALITY	WEATHER	Brçx	Char	Overess	Ren	Snow
CONTROL REPORT	WEATHER	Sun	X			
COE PROJECT HANGER TERM Buchaltz	TEMP	To 32	12.50	50-70	70-45	പ്ര വ
PROJECT N-17-Caca-P	W140	Sut	7	нф	P-co	110.
JOB NO. STA CHAV	HUNIDUA	Oγ	X	Huma	23-	1
CONTRACT NO						
SUB-CONTRACTORS ON SITE:	- Cansu	11 -				
Marray E Marr	ر کمح	Tites.	5			
EQUIPMENT ON SITE.						
HAB KI+						
7			<u> </u>			
WORK PERFORMED (INCLUDING SAMPLING):	र स्था			-Selve	œ.	19.
Sampled themats	Collecti		<del>) =</del>	ممولا	3 0	
Schaffe RA. & 45	anoles	at	M:	socci	Ave	
JE-112-11-11-11-11-11-11-11-11-11-11-11-11						
	·					
-						
		•				-
•						- 1
			- A144	5-0	#/-	
Decoral egypment &	fersion	el 3	Au	5.0	₩o.	
Decorat consent & Abadoned Boxon	Person Thu	1 3 200	A4.	5.0	<b>#</b> 6.	
Decenned engement & Absorbanced Borrans Simpled From JS	person The	<u>د</u> اء	A41	S.P.	<b>#</b> 6.	
Decenned Comment & Abandoned Borings Simpled Film JS	person The second	<u>ح</u> هم ع	Au	Sop	#6.	
Decorat consoment & Aboutoned I Borras Supled FAW JS	fersens FAN op #1.	el 3 Sop	#7	S-P	<b>#</b> 6.	
Decenned engement & Abadened Barry Simpled FAW JS	fersion FAN op #1.	2 db 2 db	#7	Sop	#lo.	

1 Oct 40	occativo -	(Continuation Sheet)
NL/Tageoff 89Mc1/4V	OUTE	12-10-91
	SI	
OUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATION		
		·
HEAL TH AND SAFETY LEVELS AND ACTIVITIES.		· ·
Decence compac	ent & person	and .
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:		
PROBLEMS ENCOUNTERED. GG. M. G.	•	
		·
	<u></u>	
		·
SPECIAL NOTES.		
_		
TOMORROWS EXPECTATIONS:	take come	sters & other
the total the	'st Louis o	Kine 7
D close - up wat	1 February	OF MICE

				R 1110 Oct 9		163
		CFF				
	DATE	A	1	١/3/إد	7/	
	- OAY	SIL		1 -	HIE	
A E DAILY OLIALITY			L		1/	
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Brott Sun	Ÿ	O	Ræn	Snow
- P11L	TEMP	To 32	N.	50-70	70-45	೮ಀ
COE PROJECT MANGER Torry Buchholz	W1N0	SI	Moor	Нф1	Reco	n 140.
PROJECT <u>NL Tavacorp</u>   Supertund Sitte	HUMIDITY	2	Vocer	Humo	1	
CONTRACT NO BOA!	l		 			
SUB-CONTRACTORS ON SITE: L. G. Zambrena	Consultant	3				
Solocotte Constitution of the Constitution of						
	<u> </u>					
EQUIPMENT ON SITE. Hand diaging equipment (	shouels, pos	t-hole	digger	rickely		
monument rods.						
				·		
WORK PERFORMED (INCLUDING SAMPLING):						
	<del></del>	1 IIch	CET	Con G		
Install 4 permanent harizontal a	nonuments	( usn	UE I	<del>9)                                    </del>		
/						
around industrial site area.				:		
<del></del>						
For each monument:	wide hole	2 .				
Dig 2 ft deep x 6 > 8 in	(DIOC TREE			ro	<u>d</u>	
Hammer more 4ft monument re	nd into 9	ound	and	naken:	flush	
Hammer Lagery 177	/					
with ground.						
Fill have w/ cement grout mix	ture.					
Decon equipment and Dersonnel.						
and JCFP and decur water	on Trust	11-11	•1	T		01/0
Soil, from borings was & placed	on Irust	737	pi le	or jan	CO.P	<i>D1.</i> 5
/ // /						
		-	S۲	€ET	_ 5¢ _	

PROJECT NL Maricorp	REPORT NO:
. <u>29 МС (14 V</u>	OUTE 12/13/91
QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRA	TIONSI
	·
	·
HEAL 'H AND SAFETY LEVELS AND ACTIVITIES.	
Modified Level "D" for	monument installation.
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	
None	·
PECIAL NOTES.	
MORROWS EXPECTATIONS:	
	ring well next week. Dec. 16+20.
/ / /	

BY Cythis Parelle TITE Assitut Project Engineer

Figure 2 (Continued)

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A-E DAILY QUALITY	Bress Bress	Cher Ources Ran Store
CONTROL REPORT	WEATHER SUN	XX
To Richalt &	TEMP To 32	2.50 (50.70 70.45   65.00
COF PHOIFC MANAGER 13.13	WIND X	Moder High Recort No.
PROJECT NL/THENCORP SFDFI  JOHN SIMCHAY Work Order # 0001	Por Por	Mader Huma
CONTRACT NO GOZITH DECLISS -90-D-0008	HUMIOLLA	
CONTRACT NO EXCEPT FOR WIS		
SUB-CONTRACTORS ON SITE:	114	1 -1
(1) codward - Clyck Consil	ents HAIS	Tram
EQUIPMENT ON SITE.		
HAR P.T		
7//10-2		
WORK PERFORMED (INCLUDING SAMPLING):		
1 11 7/63 12000 - 1	Samples to:	total lead
7164 Benten	., :	1
1716 CLIVE	11	
1774 DLIVE	Sumples to	total trad
		total level
176)	<del></del>	., (1
1729 CLIVE IAU	50P # 1	
	50P #6	
	SOP #7	
Abandoned being's IAM	SUP DE	
-		
	·	
	<u> </u>	
		SHEET

; (		and the second of the second o
WEST.	Nil Taracer	CATE 3/2/92
	001471101/	
<del>~</del> ~	CONTROL ACTIVITIES (INCLUDING FIELD CALIBE	RATIONSI
ALIT	CONTINUE	
	AND SAFETY LEVELS AND ACTIVITIES.	
EALTH	Modified Level D Prysonnel and Exigment De	740 508 B
	Definal and Exement Us	(CV) 1 ALLO GO.
	1554 2011/151	,
	ACTION TAK	EN:
PROBL	EMS ENCOUNTERED/CORRECTION ACTION TAK	11 1 1 actor was
	Il. beat and we	is not sampled due to give time
For	1724 Olive, the backyard we ched. Will contact resident to app	and and sample as a re-
<u> </u>	ched. Will spring (Blass	3
SPEC	IAL NOTES.	
3, 60		
TCM:	Sample Delmar St 1619	-1745
	Sample Delman St	
<u> </u>	·	
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EX Ci D. Pay HTLE Greekinst

DATE 3/3/92	
DAY S W X W	HIF S
A-E DAILY QUALITY  CONTROL REPORT WEATHER SUK TO THE SU	Ren Snow
To 77 17.50 50	ص عا عدم م
COE PROJECT HUNGER TERRY BUCHHOLE	Pecori No.
PROJECT NL 133 PO 21 HUMOTY ON HOW	πο .
JOB NO. WORK DITTER - 00-0008  CONTRACT NO DACW45-90-0-0008	
SUB-CONTRACTORS ON SITE:	
LICC HAB Crawil	
CCC TEXA	
ECUIPMENT ON SITE.	
HAR KIT	
THE PROPERTY OF THE PROPERTY O	
WORK PERFORMED (INCLUDING SAMPLING):  Someled 1619 Delmar 6 Total Lead	
Sampled 1619 Delmar 3 Dipliation	
1628 Delmar Grown Lead	
3 Auglity Assume	
1636 Delman 6 Total Lead	
1638 Delmar 6 Testal Lead	
1037 Delmar 6 Total Lead	
3 Lead Duglicate	
3 Quality Assurance	× 2000
1713 Demos	
1725 Delmar O Total Zead	
3 Lead Differente	
1776 Delmar 6 Total Lend	
1737 Jelma 2 1 1 1 1 1	
3 / Cad Duplicat	
	/
5. mpling IAW 50P = 1, Down Equipment This 50P =  Albertoned Boring IAW SOP = 7  Simpling IAW SOP = 7  Simpling IAW SOP = 7	<u>6</u>
Abendoned Boring IAW SOP #7	1 1 7 2

MODEL NATSS PDFI	AEPORT NO.	
Deno Work Order # 0021		3/3/92
OUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)		
T : 5:1/ 2 / 1 / 2 / 2	<del> </del>	
Take Field Duplicates and OA Samples for:		
1628 Delmor, Boring	<del></del>	
16 37 Delmar, Boring	<del></del>	
1725 Delmer, Boring	<del></del>	
1737 Delmar, Boring 1	<del></del>	·
		·
HEALT- WO SAFETY LEVELS AND ACTIVITIES.		
Madfied Level D		
Personnel & Equipment Decon	·	
	····	
	·	
ROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	•	
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· · · · · · · · · · · · · · · · · · ·		<u> </u>
PECIAL NOTES.	-,,,,,,,,,	
MORROW'S EXPECIATIONS		·
Sangle on Adams & Bonton Storets		
	<del></del>	

0AY A-E-DAILY QUALITY WEATHER BOOK CONTROL REPORT ما ك 32-50 COE PROJECT MANGER TERRY BUCHHOLZ PDFI WIND PROJECT NLTSS JOB NO. WORK Order # 0021
CONTRACT NO DAC W45-90-0-0008 HUTRO HUMIDITY SUB-CONTRACTORS ON SITE: ECUIPMENT ON SITE. K:+ HAB WORK PERFORMED (INCLUDING SAMPLING): 6 Samples Adams 710o 7128 2140 " Z148 Benton 1922 h 1926 /1 1940 1941 2020 2030 SOP 1 /<u>A w</u> close Abindrament /And 30177 SMEET 1 ST Z

nn (11) (4) 40 40 40 11

NLTSS PDFI  NO. Work Order # 0021  REPORTED THE REPORT OF THE PROPERTY OF THE	ONTRO
WEST. 1 Onles # 0021	OUTE 3/4/92
Nork Wart July	
JALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	
THE CAND ACTIVITIES.	
EALTH AND SAFETY LEVELS AND ACTIVITIES.	
Modified Level 1)	
Modified Level D Personnel & Equipment decon	
CTON TAKEN:	
ROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	
	Land to the second seco
NOTES .	1.7.
SPECIAL NOTES.	
·	
TOMORROWS EXPECTATIONS	
Sample Naple E Benton Streets	

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EY Ein Staff
TITE Greaty st

	DATE 3/5/97
	CAY S W 7 S S
A-E DAILY QUALITY CONTROL REPORT	WEATHER SUN SUN Show
COE PROJECT LANGER TERRY BUCHHOLZ  PROJECT NLTSS PDFI  JOB NO. WORK Order # 0021  CONTRACT NO DACW45-90-0-0008	TEMP   To 32   32-50   \$5,70   70-45   65-60
SUB-CONTRACTORS ON SITE:  UCC HAR Cran	
ECUIPMENT ON SITE.  WCC HAB KIT	
WORK PERFORMED (INCLUDING SAMPLING):	
SAMPLE BENTON ZZ	6
225 MAPLE 164 164	2
163	1
163 161°	- <u>-</u> -
16 1	7
- /613	
160	2
Soilsanding TAW SOP #/	1) FOD # (
Abandon Boring IAW	50P # C 50P # 7

n (	RECATINO.	
EST NLTSS PDFI	OUTE 315/12	
Work Order & Octal		
TO WAS LIGHT SIELD CALIBRA	ATIONS)	
DA Samples for borny C	learns AB,C	
DA Samples to Detroit	619 MAPLE, 1618 MAPLE	
and the later de	the ABC took duplicates.	
2256 Benton for boring I dep		
		_
- CTRATES		
ALTH MO SAFETY LEVELS AND ACTIVITIES.		
Moderate Level Decor	· · · · · · · · · · · · · · · · · · ·	
Personnel : Equipment Decon		
OBLEMS ENCOUNTERED/CORRECTION ACTION TAKE	( )	
ACTURE ENTERNATIONS	14 10 Shawed Therry	
11 (4 < 10/15 10/2	3 Maple, Showed where	
11 (4 < 100+5 100+5	3 Maple; Showed Them	
11 (4 < 100+5 100+5	3 Maple, Showed whem	
Hostile residents at 1633 Signed access agreement	3 Maple, Showed Them	
11 (4 ~ < < 100+5 & 7	3 Maple, Showed Them	
11 (4 ~ < < 100+5 & 7	3 Maple, Showed Them	
11 (4 ~ < < 100+5 & 7	3 Maple, Showed Them	
11 (4 ~ < < 100+5 & 7	3 Maple, Showed whem	
Hostile residents at the signed access agreement	3 Maple, Showed Them	
Hostile residents at the signed access agreement	3 Maple, Showed whem	
Hostile residents at the signed access agreement	3 Maple, Showed Them	
11 (4 < 100+5 100+5	3 Maple, Showed whem	
Hostile residents at the signed access agreement  PECIAL NOTES.		
Hostile residents at the signed access agreement  PECIAL NOTES.		
Hostile residents at the signed access agreement  PECIAL NOTES.		
Hostile residents at the signed access agreement  PECIAL NOTES.		
Hostile residents at the signed access agreement  PECIAL NOTES.		
Hostile residents at the signed access agreement  PECIAL NOTES.		

EY Line Greelogist

	OATE	3/	6/97	·		
	- 044	S	4	"	TH	( S
A-E DAILY QUALITY			16	10	Run	16
CONTROL REPORT	RƏHTAƏW	Bright Sun	Char	W.	rusa.	Snow
COE PROJECT HANGER TERRY BUCHHOLZ	TEMP	To 32	22.50	500	70-25	ما که
PROJECT NL133 PDF1	WINO	Stat	*	Нфп	Pec	21 NO.
JOB NO. Work Order # 0021 CONTRACT NO DACW45-90-0-0008	НИМІРТ	Оу	K	Humis		· 
				·		
SUB-CONTRACTORS ON SITE:	<del> </del>				_	
WILL HAD LAW						
EQUIPMENT ON SITE.						
HAB KI+				<del></del> -		
				•		
WORK PERFORMED (INCLUDING SAMPLING):				1.	<u>.</u>	
Sampled 1629 Cleveland	•	6_	O TAL		<u>a</u>	
16.28				<del>.</del>		
1726				·		
2008 7026				;		
2030						
2057						
2114						
2121						
2127				•		
ZIZ8						
2/3\			₩-			
2/31 2126			<u> </u>			
Soil Sampling IAW SOP*1, Decon. Abandon Borebole IAW SOP	Equip. Y	Perso	mel.	TAW.	SOP "	6
About Broke TAW SOP	*7					
(						
					<del></del> -	

Work	TSS PD Order	# 0021		ATE 3/6/92
0	ACTIVITIES (IN	ICLUDING FIELD CALIBR	ATIONS)	
LITY CONTROL	<u> </u>			
THE SAF	FTY LEVELS AN	O ACTIVITIES.		
Madid	ied Level	D mont Occon		
Person	nel & Egri	ment Occon		
	·			
	TEREDICOR	RECTION ACTION TAKE	N:.	
OBLEMS ENCO	UNTERECTOO			
			·	
PECIAL NOTES				
PECIAL NOTES				
PECIAL NOTES				
			I. J Street	
		Grand and Cleux	land Street	
		Grand and Cleve	land Street	

BY E D. Pup TITE Greategist

	DATE	3	1919	2	· · · · · · · · · · · · · · · · · · ·	<b>_</b> .	
	- 044	S	*		HIF	S	
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Brans Sun	Char	N-0	Plant	Snow	
COS PEDISOT WAYER TERRY BUCHHOLZ	TEMP	To 32	12.50	突	70-45	هک ت	
POFI	W#40	Staff	火	Нфп	Peco:	110.	
14/2 is 0 and 0 = # 00 21	HUMIDITY	Ογ	X	Hump			
CONTRACT NO DAC W 45-90 - D-000 8							
SUB-CONTRACTORS ON SITE:		····		-			
WCC HAB Crew #1							
HAR K:F							
HAD AIF							
WORK PERFORMED (INCLUDING SAMPLING):			17			111	<b>. .</b> .
Sanded 2145 Cleve			65	males			K Œ
2/49 //							
2153 11							
256							
2160 // 2161 ''							
2164 "				}			
7012 Lita	nd						
2016 "11				<b>V</b>			, 0
171.9		3 0	-0ks	10	Nu to	stal lea	ي ل
1929 - 11 1937 11		3 sa	A A	W/	total	level.	
[8] P		P: 3(1)	1				
5 ( 5 / JAN) 50P*/							
Dec For a don't & Processed IAW SOF *	6						•
Decon Equipment + Personnel IAW 50P = Abunden Brehole IAW 50P =	7		<u> </u>				
·							
						المج	
			Š	₹£1	~		

10/1 / 12 / 12 / 12 / 12 / 12 / 12 / 12	REPORT NO.
2810 Work Order # 0021	OUTE 3/9/82
OUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	
	·
	·
HEAL : AND SAFETY LEVELS AND ACTIVITIES.	
Modified Level D PPE	
Decen ( Simpling	
ROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	
	for the
1929 Grand Ave Samples were not taken	doe to buckyard area
because grave und fully covered it.	
a garden of flowers, backyard	is fill and can
only be accessed through house	and no one was
home.	
PECIAL NOTES.	
**************************************	
MCAROWS EXPECTATIONS.	
	· '
Sample 2200 Cleveland Block	<u> </u>

EY E - D. Page TITE Literlagist

En 11. -1-00 1 Oct 90

	OATE	3/	10/9	12		<del></del> -
	- OAY	S	"  X		H F	S
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Bron Sun	Char	Owen	Ren	\$7~
COE PROJECT LANGER TERRY BUCHHOLZ	TEMP	<b>*</b>	12.50	50-70	70-45	ما که
PUFT	W140	SM	Moder	*	Peco	n reg. │
JOB NO. WORK Order # 0021 CONTRACT NO DAC W45-90-0-0008	HULLIOTY	Ογ	Hoose	<u>X</u> _		
SUB-CONTRACTORS ON SITE:				·		
WCC HAT CEP.			<u> </u>	,		
EQUIPMENT ON SITE.						
ECOIPMENT ON SITE.						
WORK PERFORMED (INCLUDING SAMPLING):						
No sampling conducted due to	cold and	Win	dy W	eather		
					nelex	••
Verified Street Addresses and is	lentitied p	roper	nes		<b>/</b>	
is still all to being and	down str	rets	w/	natter	list	
	umber qu	sen	en h	ouse.		
APPENDED MOSTER IIS I WILLIAM						
Corrected master list W/ Street 1	/					
Correstes master list by server						
Correses master list wy server						
Correses master list by sitted						
Correses master list by sitted		· · · · · · · · · · · · · · · · · · ·			•	
Correses master list wy with						
Corrected Master IIST Co. Little					-	
Corrected Master list Co. Little						
Correctes moster list of articles						
Correctes moster list of articles						
Correctes moster list of articles						

CT	DUTE 3/10/92
NLTSS PDFI  - Work Order # 0021	The state of the s
LITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	
T- MO SAFETY LEVELS AND ACTIVITIES.	
None required	
TAKEN:	
BLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	
BLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:  None	
Nane	
Nane	
Nane	
CIAL NOTES	
CIAL NOTES	
CIAL NOTES	Black of Cleveland.
CIAL NOTES	Black of Cleveland.

EY C. Parlha

and a Amitant Pray, Eng.

	DATE 3/11/97
	OAY S W M F S
A-E DAILY QUALITY CONTROL REPORT	WEATHER Sun Char Overgoot Rain Show
COE PROJECT MANGER TERRY BUCHHOLZ	TEMP 50-70 70-45 45 LD
PROJECT NLTSS PDF1	HUMIOTTY OY WAY HUTTO
CONTRACT NO DAC W 45-90 - D-0008	
SUB-CONTRACTORS ON SITE:	
ECUIPMENT ON SITE.	
HAR Kit	
WORK PERFORMED (INCLUDING SAMPLING):	
Sampled Cleveland 2208	b Samples total lead + 3 diplicate BSamples total lead
7221 7221	DSIM PIO
2222	
2279	12 1 1
72.42	+3 dipliate
2243	
2246	2/ 1. [4] 1. 42
2254	6 Samples total lead
2264	6 2 M 9/23 +074 1-44
Sameline ourtained IAW	5012 1
Decon performed IAW	SOP 6
Downer to From AW	50P 5
Boring Abandonment 1AW	50P 7
	SHEET

ER 1110-1-263 1 Oct 90

(Commutation Sheet)

ANECT. NLTSS PDFI	REPORT NO.
OBNO. Work Order # 0021	OUTE 3/11/92
OS NO. WORK CHIEF COURT	The second of the second of the second
OUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)  32 VAL: Ly OLSSWANCE SAMPLE 6+	Clareland 2208
3 avality assume Sampler at	272)
- Jan 19	7242
	2254
HEALTH AND SAFETY LEVELS AND ACTIVITIES.	
Modified level D ME	
Modifica rever	
Hand a vapir Samplag & decon	
Hand avair Satisfier	The state of the s
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:  No Dackyard Sumples at 2254	01 1 1 1 1 1 1 1 1
PROBLEMS ENCOUNTERED SOLLAR AT 225	Ocycland ave 18
No Dackyard Shinging	
a pool & patio	
SPECIAL NOTES.	
TCMCRROW'S EXPECTATIONS:	
TOMORROW'S EXPECTATIONS:	
TOMORROW'S EXPECTATIONS:  Sample 2200 Gand	
	Lelogist

	OATE	3,	1121	192		
	· OAY	S	4   1		71	S
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Bron Sun	Char	a	Ran	Soor
COE PROJECT HANGER TERRY BUCHHOLZ PROJECT NLTSS PDFI JOB NO. WOCK Order # 00 21	TEMP WINO YTOINUH.	X	IZ-SO	Hono Huma	70-45 Reco	65 LD 21 NO.
CONTRACT NO DAC W 45-90 - D-0008			1			
SUB-CONTRACTORS ON SITE:  WCC HAB Crew */						
EQUIPMENT ON SITE.						
HAB Kit						
					<u> </u>	1
WORK PERFORMED (INCLUDING SAMPLING):  Shimpled 2209 Grand	6 501	noles	toto	1 /eur	1+	3 dup
2207 Gran	6 6	MOlis	total	lead		
2213 " 2213 "	"/	7				
221/ //	11			· .		
3217. "	11					
2233 "		<u> </u>	3 d	uplice	<del>.tes</del>	
2263 "	<del></del>		·			
2254 "						
2248						
Occumentation IAW SOP # 5  Occumentation IAW SOP # 6  Occumentation of PPF DISOP # 6  About Broken TAW SOP # 7						
De Farin & PPE DISOP # 6						
Aprila Beatile TAN 50P = 7					· ·	
		·		<del>/</del> -		

PASSECT NLTSS PDFI	AEPORTINO.
20810. Work Order # 0021 -	OUTE 3/12/92
OUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRAT	TIONSI
OUDITY CONTROL ACTIVITIES (III OCCOUNTS TO CONTROL	
Quelity Control Samples Taken For	Boring 1. 2209 Grand
Whater Serence	
	11 2233 Grand
	11 2254 Crand
	<del></del>
HEALTH AND SAFETY LEVELS AND ACTIVITIES.	
Middified Level "O" PPE	
Hand auger sampling + decon	
TOUR TIMEN	
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	
DECEP None	
SPECIAL NOTES	
ar concincios.	
TOMORROWS EXPECTATIONS	
	·
Simple 2200 Delmar	

or C. Paulle most tent from Era.

	DATE	March	13,1	199 6
e e <del>Tyrr</del> e e	- 044	SUIT	T.W 15	1 × 5
A-E DAILY QUALITY		Bros   Care	0.00	Ran   Snow
CONTROL REPORT	WEATHER	Sun X		
COE PROJECT HANGER TERRY BUCHHOLZ	TEMP	AM PM		70-45 45 00
PROJECT ML733 PUFT	W440	Ser Hoor	Нфп	Report No.
JOB NO. WORK Order # 0021 CONTRACT NO. DACW45-90-0-0008	HUNIDITY	X	Huma	
	Connel O	nly		
SUB-CONTRACTORS ON SITE: NONE; WCC POL	SOME CO.	· · · · · · · · · · · · · · · · · · ·		
·		<u></u>		
ECUIPMENT ON SITE.			<u> </u>	
HAB Sampling Equipment				
WORK PERFORMED (INCLUDING SAMPLING):				
Sampled The following:		Max	<del></del>	
		mar		
	227 Dely	mar		
2	233 Deln			
- 22	234 Deln			
		-		+
Desposed of \$80 gallons	ot Dec	on Wal	or a	
Tara corp Pile @ 1:00	PM			•
		•		1.
Soil Someling TAW SOP	# <i> </i>			
Soil Sampling IAW SOP & DECON EQUIPMENT + PERSONNEL ABANDON BOREHOLE IAW SO	IAW SOI	0#6		
ABANDON BOREHOLE TAW SO	P#7			
				:
		<del></del>		लि 2

PROJECT NLTSS PDF1	Q4TRO
DENO Work Order # 0021	13-13-92
QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATION	ะรา
	-
WELL TO A ME OF STREET SAME ACTIVATIES	
Modified level "D" PPE	
Decon + Sampling	
Decar + Sampling	
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	
	·
SPECIAL NOTES.	
TOMORROW'S EXPECTATIONS	
finish Delmar on Monday	

Diffe

Godon

	, UAY		<b>X</b>   '	"   "	'``	3
A-E DAILY QUALITY		Brox	Char	Overcount	Ren	Snow
CONTROL REPORT	WEATHER	Sun .	X	X		
COO. PUCHUA/ 3	TEMP	To 32	D'SO	50-70	70-45	مه که
COE PROJECT MINGER TERRY BUCHHOLZ	- W#40	\$21	Moor	HQS	Reco	M NO.
and year MC133 PDFT	-	07	1400	Huma	1 .	
JOB NO. WORK Order # 0021 CONTRACT NO DAC W45-90 - 0-0008	- HUMIDITY		$X_{\perp}$		L	لــــــا
CONTRACT NO UNC W 42 70						
SUB-CONTRACTORS ON SITE:	7					
W.CC HAB Sampling	leam		•			
	· · · · · · · · · · · · · · · · · · ·					
EQUIPMENT ON SITE.						
HAB KIT + PPE	<u> </u>					
WORK PERFORMED (INCLUDING SAMPLING):						
0 11 11/10 0 1	6 Samoles	Toto	1 4	ead		
Samples - 1410 Grand	G JAMES	"	"			
1712	11	11	//	•		
-/4/4	"	"	11	:		
- 1922	11	11	17			
1493	11	11	11			
-1424 "	<i>i1</i>	11	"			
1425	11	11	11			
-/437 "	3 Samples	Tota	1 Le	ecid		
1440	6 Sancles	Tota	1 Lo	ud		
1442 "-	3 8 25/2	Tot	6/6	vad.		
- 1473	5 50-7-					
Sail Femilia Dove JAW SOP"/	,					
Decido HPPE TRU SOPE	,					
The SAPE	5					
filerates Bories IAW SOF *	7					
Menden Dering Strice	_					
				,		
		·	S	-681 <u>/</u>	^C *	<u></u>

111-1	PUTI	REPOR	, (4).
BNO WORK ON	ler # 0021		NE 3/16/92
3 NJ	TIES (INCLUDING FIELD CALI	BRATIONS)	
UALITY CONTROL ACTIVI	HES (INCLUDING FIELD OVER	and the second	
		У.	
	<u> </u>		
·	- CTH 4DCC		
EALTH AND SAFETY LEVE	LS AND ACTIVITIES.		
	1011 100		
PPE: M	diffed Level 1		
		ĖN:	
ROBLEMS ENCOUNTERED	OCORRECTION ACTION TAK		
	od - Boring 2 N	bt Taken becau	se of beckyard
11/10 C.			
1440 G14	(1)	11 11 11	11 11 1
1440 Grad 1443 Grad	(1)		, "1
	(1)		, 11 1
	(1)		, 11 1
	(1)		,, ,, ,, ,,
1443 Grai	(1)		,, 11 1
1443 Grai	(1)		,, ,, ,,
1443 Grai	(1)		,, ", 1
1443 Grai	(1)		,, ", 1
1443 Grad		n 11 n	,, ", ", "
1443 Grad		n 11 n	,, ", ", "
1443 Grad		n 11 n	,, ", ", "
1443 Grad	d 11111	n 11 n	,, ", ", "
1443 Grad		n 11 n	,, ", ", "

BY C. Palle

_ TITE Accord Thojet Fryin

ER 1110-1-263 A-E DAILY QUALITY WEATHER Sun CONTROL REPORT 32:50 To XX COE PROJECT MANGER TERRY BUCHHOLZ TEMP Recort No. PDFI PROJECT NLTSS WIND JOB NO. WORK Order # 0021 CONTRACT NO DAC W45-90-0-0008 Moone HUMIOTY SUB-CONTRACTORS ON SITE: EQUIPMENT ON SITE. WORK PERFORMED (INCLUDING SAMPLING): 1714 2127 2139 2245 2247 2253 2256 2260 2.262 2147 IAW IAW 50P = 5 TAW

SI-EET 1

MODELT NLTSS PDFI	R∰CRT NO	
DONO Work Order # 0021	_ OUTE_3/17	192
OUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)		
Tok 3 QA+ Samples at 2147	Delmar	•
3 Duplicate 2153	Delman	
2157	Odmar	
	·	
	· · · -	<b></b>
WELL TO A LONG TO A LONG TO THE TOTAL TOTA		·
MEALTH WO SAFETY LEVELS AND ACTIVITIES.		
Modified Level D PPE		
Decon & Sampling performed	· · · · · · · · · · · · · · · · · · ·	<del></del>
Trees & Jamping fermines		
<u> </u>		
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:		
1714 Brand - Backyard Not Sopled -	Gate Locker !	
Will call resident at later time to open	ngate.	
	<i>,</i>	
2139 Grand - Backyon Not Sampled - G	ate Locked.	
Will call resident at later time to a	pen gak	
PECIAL NOTES.	<u></u>	
PECIAL NOTES.		
	<del> </del>	
CMORROWS EXPECTATIONS.	· · · · · · · · · · · · · · · · · · ·	
Sample Edison St		

ex E-ding Time Galogist

	1/2.
	3/18/92
	CAY S W X M
A-E DAILY QUALITY CONTROL REPORT	WEATHER Sun Char Overcas Ram Svo
COE PROJECT HANGER TERRY BUCHHOLZ	TEMP TO 32 32.50 50.70 70.45 45 45 45 45 45 45 45 45 45 45 45 45 4
PROJECT NUTTED FOFI  JOE NO. WITCH DENOY # 0021  CONTRACT NO DADW45-20- D-0008	MANO 24 MOON HOUSE
CONTRACT NO DA W45-90-0-0000	
SUB-CONTRACTORS ON SITE:	
WCC HAB	
ECUIPMENT ON SITE.	
WORK PERFORMED (INCLUDING SAMPLING):	
No soil sampling con	nducted due to
a france Valo Musina	the day.
CONTINOUS	
continous rain during	
Contingus y aire	
Contingus y a.v.	
Contingus y a.v.	
CONTINGUS TOUR	
CONTINGUS TOUT	
CONTINGUS TOUT	
CONTINGUS TATE	

MONET NETCO POFI	
DONO Work Order # 0021	CUTE 3/18/92
OUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	
	· ·
HEALTH AND SAFETY LEVELS AND ACTIVITIES.	
·	
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN	
PAOBLEMS CACOGNICACIONES	
SPECIAL NOTES	
5. 63.76.10165	
TOWORROWS EXPECTATIONS	

Cynthe Parke au. Proj. Eng.

3-19-92

DAY S

4 E D 4:11 V O	ATALIT V						
A-E DAILY Q CONTROL R	EPORT	WEATHER	Bright Sun	Our V	Overcent	Ren	Snow
		TEMP	To 32	12:50	50-70	70-45	
COE PROJECT WALGER TERRY BI	UCH HOLE	WINO	Sul	Hoor	Нфп	Pec	X1 NO.
PROJECT NLISS POFT	1	нимюту	Ογ	100	HUTTO		
CONTRACT NO DACW45-90 - D	-0000						
SUB-CONTRACTORS ON SITE:							
Wec	HAB TROM	#1_	<u> </u>				
EQUIPMENT ON SITE.							
HAG K	+						
WORK PERFORMED (INCLUDING SAMPLING)				5i	٥		
Sampled	1642 -1	disin	6	16-	total 1	cad	
	1700						
	1701						
	1708						
	1720				+		
	1723		3		+41-1	100h	
	1734	<u></u>	لـــــــــــــــــــــــــــــــــــــ	0 +	tal 1	<u> </u>	
	e de la companya de						
Soil sampling	IAW SOP						
Decon is Pr	PE JAW S	re # 6					
Dog. mental:	I Thu	30 AS					
Abada Bir	thole FAW	Sip # 7		<del></del>			
	·						
				9	FET_	عَمَّ كَلِ	<u> </u>

MAJECT NLTSS PDF1	_ REPORT NO	(Continuation Shee
DONO Work Order # 0021		3-19-92
QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)		
		· · · · · · · · · · · · · · · · · · ·
	<del></del>	
	··	
HEALTH AND SAFETY LEVELS AND ACTIVITIES.	· · · · · · · · · · · · · · · · · · ·	
Molfied level DP	)E	
· · · · · · · · · · · · · · · · · · ·		
De con à sompling po	chrex	<del></del>
<u> </u>		
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:		
1723 Edison - coul		
resident couldn	it chain as	المحادث
		· · · · · · · · · · · · · · · · · · ·
PECIAL NOTES.		
CUCODONE EXPECTATIONS.		
CMORROWS EXPECTATIONS:	- 04 - 14 - 3 14	2216 23
Sand - Edicon al	3'7 a144 41	31 4 4
Souple - Ection all	37 21 20:	
Somple - Ection all Wishington, 2020 2031, 20	3021 20:	
wish year addo	3021 20:	

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A-E DAILY QUALITY CONTROL REPORT	WEATHER	Brox (	Char	0.00	Ran	Snow
TERRY RICHHOLF	TEMP	To IZ	2.50	50-70	70-45	టఅ
COE PROJECT MANGER TERRY BUCHHOLZ PROJECT NLTSS POFI	- WINO	21 L	·	Нфі	Pec	on No.
JOB NO. WORK Order # 0021 CONTRACT NO DACW45-90-0-0008	- HUNIOTY	מן עס	<b>2</b>	Hump		
SUB-CONTRACTORS ON SITE:				<del></del>		
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EQUIPMENT ON SITE.	70 =					
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WORK PERFORMED (INCLUDING SAMPLING):						
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dodle	Washington	<del>4</del>	<u>5 4.</u>	mples_	1014	1000
2094	Washin And	<del></del> '		/(		
1631	Clive 3	- 11		71		
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MODEST NLTSS PDFI		Communition Show
Deno Work Order # 0021	OUTE	3.20.9
OUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS	S)	
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YEALTH AND SAFETY LEVELS AND ACTIVITIES.		
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PPE - Madified L	evelly	
ROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:		
2165 Edison - Unable to	somele navel	tol
2020 Westinton- Unable to		
20 21 Washington - Varible to		i A I
2031 Wishindon-Unible t	· · · · · · · · · · · · · · · · · · ·	. 1
2043/13 shinton - Vacale	to smale pour	i lot
1631 Olive- Truste to sav	ple front fill &	<u>qr.vel</u>
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ECIAL NOTES.		
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MORROW'S EXPECTATIONS:	: \ C ;	
Smyle Lee & 5	tote 5+1	

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DATE 3-23-92

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A-E DAILY QUALITY CONTROL REPORT	WEATHER	Brott Char Sun	Owner	Ran Snow	
TERRY RUCHHN7	TEMP	10 H H-30	.50-70	70-45 45 40	
COE PROJECT MUGER TERRY BUCHHOLZ POFI	WINO	Sul Hoose	Нфп	Recort No.	
Mark Oches # 00.21	HULLIDAY	Or Hook	Haud		
CONTRACT NO DACW45-90 - 0-000 8	•				ר ד
SUB-CONTRACTORS ON SITE:					-
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EQUIPMENT ON SITE.				 	1
HAB KITE PPT	<u>-</u>				1
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WORK PERFORMED (INCLUDING SAMPLING):	Lee St.	6 Sem	des T	otal Le	
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2148	4 /1	<u> </u>		Total	0
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Documentation	Au San	#7			4
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PADECT NLTSS PDF1	REPORT NO	Continuation Sheet
Dano Work Order # 0021		- 23-92
OUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRAT	ionsi .	
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EALTH AND SAFETY LEVELS AND ACTIVITIES.		
PPE: Mad: Frod Le	10511	
The Madition Le	i ver b	
DOSE SUR SURGENITATION CONCESSION LOTTON TAYEN		
ROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:		
2148 St-te St - Bo	ring 2 unable to	sample-
	gate bocked rissid	at not 4
	<u> </u>	.
ECIAL NOTES.	·	
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MORROWS EXPECTATIONS:		
Walnut, Chest	nil E Lower.	
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BY & Suda TIME Staff Scientist

	DATE 3-24-92
	OAY S W M DH F S
A-E DAILY QUALITY CONTROL REPORT	WEATHER BOOK Char Overcook Risin Show
COE PROJECT MANGER TERRY BUCHHOLZ PROJECT NLTSS PDFI JOB NO. Work Order # 0021	TEMP To IZ IZ-SO SO-70 70-45 65-10 WIND SM MOON HOTE PROOFING. HUMIDITY DY MOON HUMID
CONTRACT NO DACW45-90 - 0-0008	
SUB-CONTRACTORS ON SITE:	plin Team
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EQUIPMENT ON SITE.	
HAG KH SPPE.	
WORK PERFORMED (INCLUDING SAMPLING):	
	iedricahaus 3 Sanaks Total George
929	11 " 1 (o Saples Total feat
1751	valuet 9 Samples Total Lead
1745	Total Land
	distributed in the land
1713 W	A II " "
	ive 3 samples Total Lead
1753 Che	tout 6 samples Total Land
1759 h	4
[751 "	li .
1-110	11 9 Squales Total Lead
1712 "	" 9 samples Total lead
	1.1 500 # 1
Soil Sampling Done IA	w Son + 6
Decaration IA	U 500 # 5.
	IN Sop # 7.
At Marcon British	
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(Continuation Sheet)

NUTSS PDFI	PEORT NO. —	
ANECT NLTSS PDFI		3-24-72
SHO. WORK WARE " GENT		1745 126/00 -35
Quality Assurance Samples and Duplicates to	11 La Rasia	1.929 Nodember
Quelity Assurance Samples and Duplicates 7	taken TO Dotting	1712 Chestout
$\frac{3}{4}$ $\frac{1}{n}$ $\frac{1}{n}$ $\frac{1}{n}$ $\frac{1}{n}$		
D.Cop Quality Assumance Emples taken for	Brin. 1. 929 1	l'edring hans
D.Cop Quality Assurance Longles Taken To	7504	
THE SAND ACTIVITIES.		
HEALTH AND SAFETY LEVELS AND ACTIVITIES.		
PPE-Modified L	evel "D"	
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN: Niedcianas 931 - 110	ille to take	B2 all
Minds 13	werest & gra	well
10	ble to take	Da Va Kau
Wiedcahaus 9ax - Vac	ord.	
Wilnut 1745 - Unable to	take Ba	no trent or
W-1/14 - 1143 - Wass. vie	yard	- lin backu
Chestnot 1712 - Unable to	s take Ba, all	garling.
SPECIAL NOTES.		
TOMORROWS EXPECTATIONS:	5	Viedring hausi
Olive, Maple	2 36130	
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DATE 3-25-9)	
OAY S W M F S	
A-E DAILY QUALITY	
CONTROL REPORT WEATHER SAN X	
COE PROJECT HANGER TERRY BUCHHOLZ	
PROJECT NLTSS PDFI WIND SX NOON HOT RECORNO.	
Work Order # 00 bl	
CONTRACT NO DAC W 45-90 - 0-000 8	i
SUB-CONTRACTORS ON SITE:	
WCC HAB Sampling Team.	ı
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EQUIPMENT ON SITE.	
HAS KIT & PDE.	
WORK PERFORMED (INCLUDING SAMPLING):	
Sampled - 822 Niedringhaus - 6 Samples Testal	lea
838 11 W. H //	1 - 1
1709 Maple - 3 Samples Total	ÆQ Lad
1722 11 1 - 6 Samples lotal	~ TO
1739 Olive - 11 11 11	
1726 1111 - 11 11	
1732 11 " - 11 " "	
1618 Sorve - 11 11	
1642 11 1 - 11 11	
1734 " " - " " "	
1750 "" - " "	1
S. 1 S. 1 Day FALL SOR#1.	
So.1 Sampling Done IAW SOP#1. Decon & PPE IAW SOP#6. Documentation IAW Sop#5. Abandoned Boring IAW SOP#7.	
Documentation IAW Sop #5.	
Abandoned Boring Itw Sop #7.	
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suest / 3f 2	

NLTSS PDFI	CMTROGR	
OBNO. Work Order # 0021	OUTE	3-25-92
OUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS	S)	
OUZIT COMMOUNT		
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CTRENES		
HEALTH AND SAFETY LEVELS AND ACTIVITIES.		
PPE: Modified L	evel" D"	
		
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PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	4.5	
	to take Ba	AN SIGHT
front y	ord neighbo	d d
NV.K. 1		
1750 Spruce - Bi tak	en by tree.	·
7/30 9/100		
SPECIAL NOTES.		
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TOMORROWS EXPECTATIONS:	1 - Mediso	<u> </u>
TCMCRROWS EXPECTATIONS: Elizabeth Gran	VOL. 4 1-15-0-15	

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•	DATE 3-26-92
	DAY SIMITW THIFIS
A-E DAILY QUALITY	
CONTROL REPORT	WEATHER Sun Char Overcont Rain Snow
0011111021121	
COON PURTUAL Z	TEMP TO 22 22/20 50-70 170-45 45 00
COE PROJECT HANGER TERRY BUCHHOLZ	Sul Mogar, Hon Recort No.
PROJECT NCTSS PDFL	WNO
Work Order # 00 hl	HULLIDITY DY LOOK HUTE
CONTRACT NO DACW45-90 - D-0008	<u> </u>
SUB-CONTRACTORS ON SITE:	
INCC HAR SOM	moliny Tean
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EQUIPMENT ON SITE.	
ECOIPMENT ON SITE.	
HAB KIT & PPE	
WORK PERFORMED (INCLUDING SAMPLING):	
	Grand Co Sangles Total Les
Sampled - lalle	5 lich le le le
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1242	11 1/2
1125_	nh la la h
/229	11 11 9 Samples Total Le
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	11 11 9 Samples Total Le
123 8	a c li Till
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901	11 11 Co Samples Total La
7 - 900	11 4 /2 Samples Total Le
919	11 11 . 6 Samples Total fear
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ALITY CONTROL	L ACTIVITIES (INCLUDING FIELD C	LIBRATIONSI		P	
ACTIVITIES OF THE PROPERTY OF			- T-71	(0)	900 Grand, L	Scring
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ALTH AND SALE	OPE	: Modi	ich Leve	1		
				 		
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ROBLEMS ENCO	UNTEREDICO	PRRECTION ACTION	TAKÉN:	take Bo	a gate	lock
ROBLEMS ENCO		PRRECTION ACTION 1238 1238 1238	· Unide to	take Bo	a gate	locke
ROBLEMS ENCO		PRRECTION ACTION 1238 1238 1238	TAKÉN: Unde to Pavene	take Bo sample	a gate	locke ,ele
ROBLEMS ENCO		PRRECTION ACTION 1238 1238 1238	· Unide to	take Bo sanyle	a gate	locks
ROBLEMS ENCO		PRRECTION ACTION 1238 1238 1238	· Unide to	take Bo sangle	a gate	locke, el è
ROBLEMS ENCO		PRRECTION ACTION 1238' 1238' 1238'	· Unide to	take Be sample	a gote all grav	lock
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PECIAL NOTES.	Gu	ranch 925	Paver	take Bo	a gate	lock
PECIAL NOTES.	Gu	ranch 925	· Unide to	take Be	a gate	lock
SPECIAL NOTES.	Gu	ranch 925	Paven	take Bo	a gate	lock
PECIAL NOTES.	Gu	ranch 925	Paven	take Be	a gate	lock

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OAY S W M H F S	
A-E DAILY QUALITY	
CONTROL REPORT WEATHER SUN IN STORE AND STORE SUN IN STORE AND STO	
TEPP RICHAN 7 TEMP TON 12.50 SET TOUS ESLE	-
COE PROJECT MANGER TERRY BUCHHOLZ PROJECT NLTS: FOFI WIND SEE MOON POR PRODUCT NO.	
MOCK OCHEC = 0021	
CONTRACT NO DAC W 45-90 - D-0003	닠
SUB-CONTRACTORS ON SITE:	_
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HAB KIT & PPE	7
HAB KIT & PPE	
WORK PERFORMED (INCLUDING SAMPLING):	<u>]</u> .
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goy 11 1 le samples Total	4.c.
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Documentation IAW Sop #5	
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овно Work Order # 00.2.1	OUTE 3-27-92
QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRA	TIONS
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STATE OF STATE STATE ACTIVITIES	
HEALTH AND SAFETY LEVELS AND ACTIVITIES.	•
PPE- Modifi	of level "D"
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	
T 823- Un	able to sample B2, gate locked
	esident and
To 2 803 - Un	al all a casel.
Iowa 805- U	able to take Be all
	lasts is front gard
SPECIAL NOTES.	
TOMORROWS EXPECTATIONS	100 61' 1 State
2/00 Black of a	100 Edison + State
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W_ & Dlade State Suntert

A-E DAILY QUALITY WEATHER BOTH CONTROL REPORT صنا ندم COE PROJECT HANGER TERRY BUCHHOLZ Frecont NO. PROJECT NUTSE WE40 JOB NO. WITH DIREC = DO 21 YTOIMCH CONTRACT NO DACW45-90 - D-0008 SUB-CONTRACTORS ON SITE: EQUIPMENT ON SITE. WORK PERFORMED (INCLUDING SAMPLING): Ed:soa 2122 auas ta 1. 1 1 2128 16 16 4 1. State 10 ţc State: es Tollal Lea.

MANUET MATTER PLFI		
DENO Wick Order # 0021	CATE _	3-12-92
QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATION	(S)	
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HEALTH AND SAFETY LEVELS AND ACTIVITIES.		
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PPE: Modifica. L	2781 1	· .
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN. Ed: 60- 2122 - Unble	+ 6 0 0	Ba frest
Ed:60- 3199 - Made	I genel 2's	proper.
<u> </u>	V	
Grand 3139 - Only had	to sample !	done
State 2148 - 11	18000000000	
State 2148		
SPECIAL NOTES.		
TOMORROWS EXPECTATIONS		
Creen os d &	Mc Canbrid	St.
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DATE 3-31-92

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A-E DAILY QUALITY			1		ل_
CONTROL REPORT	WEATHER	in X	0.00	Ren Snow]
COE PROJECT HANGER TERRY BUCHHOLZ	TEMP	10 IZ IZ:30		क्छ छ ७	
PROJECT_NLTSS POFI	WENO	St NOON	HQT	RHOOT NO.	
DAND WORK Order # 0021	HUHIOTTY	Or How	Huma	•	
CONTRACT NO DACW45-90 - 0-0008		<u> </u>			ا
SUB-CONTRACTORS ON SITE:				-]
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EQUIPMENT ON SITE.					-
HAB Kit & (PE		·		_
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WORK PERFORMED «NCLUDING SAMPLING):					↓ ,
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823	Tales	٠ ر ج	emple	Total	Lea
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0810 Work Order # 0021	OUTE 3-31-72
OUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATION	Sì
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HEALTH AND SAFETY LEVELS AND ACTIVITIES.	
PPE: Modifiel	Level "D."
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	- unable to take B2
Jowa 821 - Fr	ont yord - B' already done
SPECIAL NOTES.	
TOMORROW'S EXPECTATIONS	
2200 Edie	500.
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	CAY	SILI	W: 124	1 + 15
A-E DAILY QUALITY CONTROL REPORT	wелт ч ея	Brox Char	Dag R	en Sicu
•	TEMP	To 22 27:50	55-70 70	:45 E5 vo
COE PROJECT MANGER TERRY BUCHHOLZ	- WIND	Su Hoom	HOT I	Recort No.
PROJECT NLTSS PDFI JOB NO. WOCK Order # 0021	- HULLIDATY	07 1400	Herma	•
CONTRACT NO DACW45-90 - 0-0008	- HOMIDITT			
SUB-CONTRACTORS ON SITE:				
WCC HAB S	sarpling -	TRAN		
		<u> </u>		
ECUIPMENT ON SITE. HAG K: 1 &	OPE			
Mag A. L.	<u></u>			
WORK PERFORMED (INCLUDING SAMPLING):				
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Soil Sampling IA	w 500 #	1		
Soil Sampling IA Decon & PPE F Downertation 3	AN Ex	#6.		
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Abarbon Boring	IAU S	p#7.		
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MODEL METSS PUFI	(Continuation ()
DBNO Work Order # 0021 . OUTE_	4-1-90
OUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	
2223 Edison - 3 QA samp	les
3 Dip. 50	-ples
2212 Edison - 3 QA sample	ا
3 Dun Same	les
2218 Edicon - 3 QA samples	
2230 "1 - 3 QA semples	,
2237 " - 3 QA samples	
3 Dip. Sange	<u>u s</u>
HEALTH AND SAFETY LEVELS AND ACTIVITIES.	
Modified, kerel "D"-PPE	
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	
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SPECIAL NOTES.	
TO LOCAL CASE CTATIONS	
TOMORROWS EXPECTATIONS State St.	
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EX_X-Ileda Staff Scientist

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A-E DAILY QUALITY CONTROL REPORT	wелт ч ея	Bright Sun	Ž P	ross P	len Snow
TERRY RICHAN 7	ТЕМР	To 32	E 39 3	הן סדום	25 25 00
COE PROJECT HANGER TERRY BUCHHOLZ PROJECT NLTSS PDFI	WINO	Su	19	401	Recort No.
JOB NO. WOCK Order # 0021 CONTRACT NO DACW45-90-0-008	. HUNIDLA	Οŭ	X I	una	
CONTRACT NO STATE OF 12					
SUB-CONTRACTORS ON SITE:					
WCC HAR 2					
EQUIPMENT ON SITE.					
HAB Equipment List					
WORK PERFORMED (INCLUDING SAMPLING):					
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Sampled Residents 2212	State	11	11	111	11
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223	State	11	- //	77	1)
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	JYAIC				
Engled Soil IAW SOP	#/				
December IAU SOP	* 5				
Down Equip, + PPE TUSOF	0 #6				
Abendon Borchale SIAW SOI	0=7				
20 mg/s					
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Ex C. Pavella Assitant Proj. Eng.

A-E DAILY QUALITY CONTROL REPORT 22.50 To X COE PROJECT HANGER TERRY BUCHHOLE TEMP PROJECT NLTSS POFT JOB NO. WOCK O COLOR # 50 21

CONTRACT NO DACW45-90 - 0-0008 100 HUMIDITY SUB-CONTRACTORS ON SITE: ECUIPMENT ON SITE. HAB K:+ WORK PERFORMED (INCLUDING SAMPLING): 1725 11.4 1710 2250 2254 2251 11 Edison 1, h " ic to 11 16 11

NEWEST NATES POFT	ಸಹಾರಣಗಳು	
BNO Work Orner \$.002.1	DITE	4.3-92
OB NO. VVCTA		
OUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	3 QA son	moles
Sampled: 1725 State.	10 11	
11 11	3 Dua	
2251 " "	3 QA 500	oles
2255 Edison	3 QA San	ples +
	3 Dup.	
2262 11 11	3 ax sem	cles
1937 Cleuclar	3 QA 5	ingles
LIGHT AND SUSTEMA EVELS AND ACTIVITIES.		
Modified Level -	2-10	9
Modified Level- Decon & Samplin	S britain	
THE CORRECTION ACTION TAKEN		
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN	• .	
51.te, 2256- UM	ble to som	ple
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Ed: 50 ~ 2244 - U	relyle to se	2
diced	2 in bocker	S (1)
in	carpled o	2000
SPECIAL NOTES		
Towa (100)		
1000 (100)		

* Koleda Staff Swentist

6 ATRIL 1992 A-E DAILY QUALITY WEATHER SUN CONTROL REPORT ಚಿತ To 22 TEMP COE PROJECT HANGER TERRY BUCHHOLZ Recort NO. WEND PDFI PROJECT NLTSS DOBNO WORK Order = 0021 HUTTO HUMIDITY CONTRACT NO DACW45-30 - 0-0008 TEAM #2 HAB WCC SUB-CONTRACTORS ON SITE: KIT HAB EQUIPMENT ON SITE. WORK PERFORMED (INCLUDING SAMPLING): TOTAL LEAD IOVA SAMPLED IOWA WASHINGTON TOWA 900 906 916 1208 WASHINGTON 805 WASHINGTON . SOP SOIL SAMPLED TAW 50p # DECON IAW SOP # 7 IAW ABANDON BORING 50p # 5 IAW DOCUMENTATION

200 1214 - 1000

10-6

MUEST NETSS PDF1 _ CUTE 4/6/92 Dens Work Order # 0021 CUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS) NONE HEALTH AND SAFETY LEVELS AND ACTIVITIES. MOD LEVEL D PPE SAMPLLING + DECON PERFORMED PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN: 1202 FOWA FRONT YARD SAMPLLED BEFORE STORTING BACK YORD OWNER STATED HE CHANGED HIS MIND OND DID NOT WANT US TO SAMPLE. WE DID NOT 1205 Towa Front Yard Not Sampled due to plants and flowers, 1005 Washington Not Front Kird Not Sampled due to gravel. SPECIAL NOTES . TOMORROWS EXPECTATIONS SAMPLE TOWA, WASHINGTON.

History of the Control of the Contro

•	, KT# 7.	APRIL 92
	DAY S	- X " "
A-E DAILY QUALITY CONTROL REPORT	WEATHER Sun	
TERRY BUCHHOLZ PROJECT NLTSS FOFT JOB NO. WOCK Order # 0021 CONTRACT NO DAC W45-90-0-0008	TEMP To 32 WIND SX HUMIDTY DY	1 2 2 2
SUB-CONTRACTORS ON SITE: W. C.C. HOB	TEOM #2	
	· · · · · · · · · · · · · · · · · · ·	
EQUIPMENT ON SITE. HAB KIT		ý.
WORK PERFORMED (INCLUDING SAMPLING):		
1004 IOWA	3 TOTAL LE	O LEAD DY.
1005		0
1009	B	0
1011	8	0
1012	6	0
1014	. 6	0
1026	2	0
1028	6	3
1030	6	0
1302 POR CEP WASHINGTON	6	3
TOUR CEV 1	6	Q
/32/ +32/		
SAMPLED IAW SOP # 1		
Dream DDG TAW SOP	6	
Daniel Darion IAN SOP	5	
ABONDEN BORINGS IAW SOP		
<u></u>		
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		122

WORK Order # 0031 WORK Order # 0031 ALITY CONTROL ACTIVITIES INCLUDING FIELD CALIBRATIONS) 1004 Fowa 3 Q.A. SEMPLES 1014 3 1030 3 Dupling + 3 1302 WESHICTON 3 Dupling + 3 1302 WESHICTON 3 Dupling + 3 ALTH AND SAFETY LEVELS AND ACTIVITIES. MOPIFIED LEVEL "D" PPE PICON T SEMPLING PERFORMED OBLEMS ENCOUNTEREDICORRECTION ACTION TAKEN: 1004 JONA PROFIT YARD DUST OF STONE T SENT 1018 FOND NOT SEMPLED WITH TO SENT THE LOCKED GATE AND NO QUEE HOME ECIAL NOTES.	NLT	55 P	υ£1		дерокт (40). <u></u> .	
ALTY CONTROL ACTIVITIES INCLUDING FIELD CALIBRATIONS 1004	Weck	Order	# 0021		_ are Z	APRIZ 92
1004 FOWD 3 Q.H. SEMPLES 1014 3 Duplies + 3 1302 WASHUCTON 3 Duplies + 3 ALTH AND SAFETY LEVELS AND ACTIVITIES. MOPIFIED LEVEL "D" PPE DIECON T SAMPLING PERFORMED OBLEMS ENCOUNTEREDICORRECTION ACTION TAKEN: 1004 JOWN PROFIT YARD DURTO STONE T SERVING FORMED 1018 JOWN NOT SAMPLED DUE TO LOCKED GOTH AND NO ONE HOME ECIAL NOTES. DENVER, OHIO, W2014, ROCK ROAD,	INO. TATAL		THE STATE OF THE S	THIRRATIONS)		
1004 LOW 3 Daplies + 3 1030 V 3 Daplies + 3 1302 Westrator 3 Daplies + 3 ALTH MO SAFETYLEVELS AND ACTIVITIES. MOPIFIED LEVEL "D" PPE DIFCON T SAMPLING PERFORMED OBLEMS ENCOUNTEREDICORRECTION ACTION TAKEN: 1004 JOWN PRINT YARD DURT STONE T SARE 1028 JOWN PRINT YARD DURT TO LICKED GOTH AND NO OME HOME ECIAL NOTES. ECIAL NOTES.				ALIGHA HOUSE	3 Q.A.	SOMPLES
1030 1302 WASHILTON 3 Duplicas 7 3 ALTH AND SAFETY LEVELS AND ACTIVITIES. MOPIFIED LEVEL "D' PPE PICEN T SAMPLING PERFORMED OBLEMS ENCOUNTEREDICORRECTION ACTION TAKEN: 1004 1028 1028 1018 FOUR NOT SAMPLED DUE TO LOCKED GATE AND NO OME HOME PECIAL NOTES. CHICAROWS EXPECTATIONS PLANKE, OHIO, W202, Rock ROAD,			towa		3	1
ALTH AND SAFETY LEVELS AND ACTIVITIES. MOPIFIED LEVEL "D" PPE PECENT SAMPLING PERFORMED OBLEMS ENCOUNTEREDICORRECTION ACTION TAKEN: 1004 Jawa Prot Yard Ducto Stone + Sari 1018 FOUR NOT SAMPLED DUCE TO LACKED GATE AND NO QUE HOME ECIAL NOTES. MORROW'S EXPECTATIONS DEVUKE, OHIO, W2014, ROCK ROAD,		014		2 D - i'-le	+ 3	
MATH AND SAFETY LEVELS AND ACTIVITIES. MOPIFIED LEVEL "D" PPE PECAN T SAMPLING PERFORMED OBLEMS ENCOUNTEREDICORRECTION ACTION TAKEN: 1004 JOWA PROFT YARD DURTO STONE T SARE 1028 JOWA PROFT YARD DURTO STONE T SARE 1018 JONA NOT SAMPLED DUE TO LACKED GATE AND NO ONE HOME ECIAL NOTES. DECORROW'S EXPECTATIONS DENUR, OHIO , W201, ROCK ROAD,		030	<u> </u>	2 Dalias	× + 3	Ţ
MODIFIED LEVEL PERFORMED DECON T SAMPLING PERFORMED OBLEMS ENCOUNTEREDICORRECTION ACTION TAKEN: 1004 JOHN MO SAMPLE TOKEN IN 1028 JOHN PROTT YARD DUETO STONE TSAMP 1018 JOND NOT SAMPLED DUE TO LACKED GOTE AND NO ONE HOME ECIAL NOTES CHICAROW'S EXPECTATIONS DENVIR OHIO, W2014, ROCK ROAD,		1302	WASHIGTOL	U 3 Duplan	<u> </u>	
MODIFIED LEVEL PERFORMED DECON T SAMPLING PERFORMED OBLEMS ENCOUNTEREDICORRECTION ACTION TAKEN: 1004 JOHN MO SAMPLE TOKEN IN 1028 JOHN PROTT YARD DUETO STONE TSAMP 1018 JOND NOT SAMPLED DUE TO LACKED GOTE AND NO ONE HOME ECIAL NOTES CHICAROW'S EXPECTATIONS DENVIR OHIO, W2014, ROCK ROAD,						
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OBLEMS ENCOUNTEREDICORRECTION ACTION TAKEN: 1004 JOWA MO SAMPLE TOKEN IN 1028 JOWA PRONT YARD DUETO STONE T SARE 1018 FOUR NOT SAMPLED DUE TO LOCKED GOTE AND NO ONE HOME ECIAL NOTES. CHICAROWS EXPECTATIONS DENVER, OHIO, W2014, ROCK ROAD.	ALTH MO SAFET	LEVELS A	ID ACTIVITIES.	" " " " "	シシド	
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OBLEMS ENCOUNTEREDICORRECTION ACTION TAKEN: 1004 JOWA PRONT YARD DUETO STONE + SARE 1018 FOUR NOT SAMPLED DUE TO LOCKED GOTE AND NO ONE HOME ECIAL NOTES. CHICAROWS EXPECTATIONS DENVER, OHIO, W2014, Rock ROAD.		PIECO	~ 7 SPM	PLING PE	XYVXXX	·
1028 TOWP PRONT YARD DUETO STOME + SHELL 1018 FOUR NOT SAMPLED DUE TO LOCKED GATE AND NO ONE HOME SECIAL NOTES. CHICAROW'S EXPECTATIONS DENVER, OHIO, W2014, ROCK ROAD.						
CHICAROWS EXPECTATIONS DENVIR OHIO, W2014, ROCK ROAD.		1004	JOWA JOYA	PRONT YARD	DUE TO LOC	
CHICAROWS EXPECTATIONS DENVIR OHIO, W2014, ROCK ROAD.						
EMCRROWS EXPECTATIONS DENVIR OHIO, W2014, ROCK ROAD.			-			
•	ECIAL NOTES.					
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•	DICAROWS EXPE	ETATIONS	DEN CER,	V		
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	DATE 8 APRIL 92
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	s [] X _
A-E DAILY QUALITY CONTROL REPORT	WEATHER BITCH COM ONE Run Show
	TEMP TO 12 12-50 50.70 70-45 45 40
COE PROJECT MANGER TERRY BUCHHOLZ	WEND SS TOTAL
PHOJECT No. 21	HUMIDITY OY MOS HUNG
IIAC.W45 /	
SUB-CONTRACTORS ON SITE: WCC HAB TEA	m #2
EQUIPMENT ON SITE. HAB KIT	
WORK PERFORMED (INCLUDING SAMPLING):	3 TOTAL LEAD
2025 BRYAN	/2
2035	
2037	
2503 DENVER	
2507	
2619 V	
2026 0410	
2028	
2009 ROCK ROAD	
2636 V. 201	
CPP 21806	
7221 IOWA	V
SAMPLED JAW SOPE	
	1
DECON PPE JOW SOP	5
DECOMUNITATION SOF	7
ABENDON BORING ION SOF	
	SHEET OF 2
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Ali T	SS PDFI			REPORT NO.		
JECT. TVCT	SS PDFI Order # 00	031		DATE	8 AIRI	<u>- 92</u>
NO. WORK	Wart		PATIONS)			
ALITY CONTROL	ACTIVITIES (INCLUDIA	NG FIELD CALI	SAX 10.10.		<u></u>	
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					<u> </u>	
	THE SAND ACTIV	/ITIES.				
MIH MO SAFET	MODIFIED	LEV	EL D	170	<u>e</u>	
	MODIFIED PECM F	SAMPLI	UC PRE	FORMED		
	PECIPU.					
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ORI EUS ENCOU	INTERED/CORRECTK	ON ACTION TAI	(ÈN:	17480	we s	PLL
OBLEMS ENCOU	INTERED/CORRECTK	ON ACTION TAI	(ÈN:	YPRD BONN	ups G Do	PLL NE
OBLEMS ENCOU	INTERED/CORRECTK	ON ACTION TAI	(ÈN:	YARD BORIN	ups G Do	PLL NF
OBLEMS ENCOU		ON ACTION TAI	(ÈN:	YARD BONIN	ups C Do	PLL NE
OBLEMS ENCOU	INTERED/CORRECTK	ON ACTION TAI	(ÈN:	VARD BONIA	L Do	ell NE
OBLEMS ENCOU	INTERED/CORRECTK	ON ACTION TAI	(ÈN:	VARD Boñin	ups G Do	PLL N.F.
	INTEREDICORAECTIC 2025 TILLED	DN ACTION TAI BRYAN , ONLY	KEN: , FROM T ONE			· · · · · · · · · · · · · · · · · · ·
	INTEREDICORRECTK 2025 TILLED	BR YAN, ONLY	KEN: FROM T ONE	pn DRE		· · · · · · · · · · · · · · · · · · ·
	INTEREDICORRECTK 2025 TILLED	BR YAN, ONLY	KEN: FROM T ONE	pn DRE		· · · · · · · · · · · · · · · · · · ·
	INTERED/CORRECTK	BR YAN, ONLY	KEN: FROM T ONE	pn DRE		· · · · · · · · · · · · · · · · · · ·
	INTEREDICORRECTK 2025 TILLED	BR YAN, ONLY	KEN: FROM T ONE	pn DRE		· · · · · · · · · · · · · · · · · · ·
PECIAL NOTES.	REFERED	BR YAN, ONLY	KEN: FROM T ONE	pn DRE		· · · · · · · · · · · · · · · · · · ·
PECIAL NOTES	REFERED PECTATIONS:	PR YAN ONLY FROM TO	KEN: FROM T ONE	pn DRE		· · · · · · · · · · · · · · · · · · ·
PECIAL NOTES	REFERED	PR YAN ONLY FROM TO	KEN: FROM T ONE	pn DRE		· · · · · · · · · · · · · · · · · · ·
PECIAL NOTES	REFERED PECTATIONS:	PR YAN ONLY FROM TO	KEN: FROM T ONE	pn DRE		· · · · · · · · · · · · · · · · · · ·

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DATE JAPKIL 12	•
DAY S W Y	S
Town Laws Durches Ran ISO	~
WEATHER Sun	
TEMP 162 22 7	9
WIND WIND HOT HOT	·
Dy Moder Huma	
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Tan#7	
JEAN .	
To Fall FAD	
· STAL LAND	
ROAD	
3 1500 DVP.	
J LEUI -	
Y	
7 1500 PV	P.
V 3 LEMY PO	
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SHEFT OF S	7
	WEATHER BOOK OWN OWN Run ST. TEMP TO 32 32-50 SQ/6 TO-45 45 WEND ON MODER HUTED HUMIDITY ON MODER HUTED A TO FAL LEAD 3 LEAD DUP. 3 LEAD DUP.

DIECT. NLTSS PDFI	REPORT NO.
BND. Work Order # 0021	OUTE 9 PIRIL 92
BNO. THE PROPERTY OF THE PROPE	
UALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	3 Q.A. SEMPLES
1018 Jowa	
1849 EDWARDSVILLE ROAD	+ 3 DUPS.
935 REYNOLDS	
1113	V + 3 DUPS.
1129	
	•
EALTH AND SAFETY LEVELS AND ACTIVITIES.	Dr
	Descense D
PETEN & SAMPLING P	PRICE
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	
PROBLEMS ENCOUNTERED TO THE PR	
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SPECIAL NOTES.	
La La Kanna	du
CMORROWS EXPECTATIONS: ELIZABETH & Kenne	J
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BY Mollore TITE FIELD TECHNICIAN

	DATE	10 APR	16-
	· OAY	Su	M PH E
A-E DAILY QUALITY CONTROL REPORT	WEATHER	star C	Overcent Rain Snow
COE PROJECT WALGER TERRY BUCHHOLZ PROJECT NLTSS PDFI	TEMP - - WINO	To 32 32-50	20,76 70.46 45.40 High Recort No.
рямест 100 до 100 до 1000 до	- HUMIDITY	on man	HUMB
SUB-CONTRACTORS ON SITE: W.C.C. HPB	TUPM #2		
EQUIPMENT ON SITE. HAB KIT			
RED S	 		
WORK PERFORMED (INCLUDING SAMPLING):		/	1200
1604 KENNE	<u> </u>	CO TOLL	al LEAD
1605			
1608			
1610			
1019 MSCAMB	e i DG-IZ		
1023			
1916 ELIZA	BeTH		
160'			
1603			
1608-			
1611		· V	
1101			
Su Constitut Tour Sop	1		
DOIL SOMITED TANK SOP	6		
SOIL SOMPLED TAW SOP TO DECON & PPE TAW SOP TO DOCUMENTO FION TAW SOP TO SON TAW	5		
POCUMENTATION IAW SON I	+7		
ABANDON BORINGS IMM SOF 1			
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(Commution Sheet)

NLTSS PDFI NO Work Order # 0021	AEORT NO	4/10/92
Work Order # 0021	OTE_	7776
ALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRAT	IONSI	
MAD MW LEW		
· · · · · · · · · · · · · · · · · · ·		
ALTH MO SAFETY LEVELS AND ACTIVITIES.		
MOD. LEVED "D" DECO & SAMPLM	PPE Disposition	
DIECON & SAMPLING	PERPORPLEY	
<u> </u>		
TAKĖN:		
ROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	•	
None		
PECIAL NOTES.		
CMCRROWS EXPECTATIONS:		<u>.</u>
600 Block Meredocia.		

ER 1110-1-263

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•	0.75	4/13/9	2
	DATE	TA T	W THIF S
A E DAILY QUALITY			
A-E DAILY QUALITY CONTROL REPORT	WEATHER SU		X Ran Snow
			0.70 70-45 65-10
COE PROJECT HANGER TERRY BUCHHOLZ	1EMP 10		1070 70-45 85 40
PROJECT NLISS PUFL	WINO S	X	uma
work Order # OO Al	HUMIOTTY		
CONTRACT NO			
SUB-CONTRACTORS ON SITE:			
WCC HAB Crow # C			
EQUIPMENT ON SITE.			
HAR KIT			
WORK PERFORMED (INCLUDING SAMPLING):		1 / 1	s Total Lead
Sampled 907 Madison	CFP Madi	5 Sample	3 1274
606 Moredocia de	TO THE THE	an	
670			
416			
626			
628			
6.36			
609 Salvet	<u> </u>		·
615			
633 637		V	
	<u> </u>		
Soil Sampling (AM) SO	P/		
Decon 1 time Aw So	56		
Documentation PAN SO	P7		
Boing Abandoment 18th Se			
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MALTSS PDFI	REPORT NO.
2000 Work Order # 0021	OUTE 4/13/92
OUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	
	•
HEALTH AND SAFETY LEVELS AND ACTIVITIES.	
Modifified Level D PAE	
Dream & Sampling performed	
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	
Couldn't Sample 909 March	Son because yard
was paved and gravel fill.	. /
PECIAL NOTES	
CMCRROW'S EXPECTATIONS: Sample October 22nd Street	I-
Sample Uclmar 220 Street	/->
•	

BY List Holeyist

	DATE 1/14/92
	DAY S W W W H F S
A-E DAILY QUALITY CONTROL REPORT	WEATHER Sun Sun Sun Sun
T 0.11 in	TEMP TO 12 13:50 SATO TO-45 65:00
OF PROJECT LINGER Jerry Bycholz	WIND THE MODE HOT RECOT NO.
PROJECT NLTSS PDF1 DOZI	HUMIDITY ON MOON HUMO
DACI-105-90-1-0018	HOMICH T
SUB-CONTRACTORS ON SITE	
UKC HAB Tram Z	
COURT OF COURT	
ECUIPMENT ON SITE. HAB Kit	
HAB Kit	
WORK PERFORMED (INCLUDING SAMPLING):	7.0
12/2 22/19	B Total lead + 3LQ
Sampled 1290 Delma	6 Total lead + 3LD+3LQ
1729	6 Total lead
2016	+3L0+3LQ
2019	V 310
2124	37.tal lead + 3LD + 3LD
2133	6 Total lead
2154	1310 5310
2209	+310+310
2254	3 Total Irad + 3LQ
2256 -	6 Total Irac
2257	
2763	V
	(a) (
Soil Sampling Atw.	500 S
Documentation Aw	50P 6
Decoin 1840	<u> </u>
Boring Abandonment /Au	USOP 7
	, 3
	SHEET CF

) (OC) (40)		
GCT. NL7SS PDF1		OUTE 4/14/42
6 Work Order #10021		CY16
LITY CONTROL ACTIVITIES (INCLUDING FIELD CA	LIBRATIONSI	- 31 0
LITY CONTROL ACTIVITIES TINCESON A +		+ 3613
Took 3 QA Samples at	2016	7 7
	2129	+320
	2709	+310
	2254	·
	1240 SSUR	
ALTH AND SAFETY LEVELS AND ACTIVITIES.		
Modified Level D PPE		
	i	
Decon & Simpling performe	d	
0		
TOW ACTION I	TAKÉN:	161
OBLEMS ENCOUNTERED/CORRECTION ACTION 1	Delmar	trate locked
No backyard at 1721		L. L locked
2254	V.	trate location
1 :240	72 <u>M</u>	
and 1690		
1		
PECIAL NOTES.		
PECIAL NOTES.		
PECIAL NOTES.		
	·	
	sn ? Cleveland	
CHORROWS EXPECTATIONS Sample Delmar, EDI:	sen! Cleveland	
	sn! Cleveland	

BY End Goodist

	DATE 4/15
	CAY S W T W T S
A-E DAILY QUALITY CONTROL REPORT	WEATHER SUN X X X X X
PROJECT MANGER TORY BUCKES PROJECT NILTSS PORT NOB NO. WARK Order # ONZI ANDRESS OF MANGER	TEMP TO 22 22-50 SOATO TOUR LESCO WIND SAL MODER PROTECTION HUMIDITY PT MODER PROTECTION HUMIDITY PT MODER PROTECTION
CONTRACT NO DAC W45-90-D-0008	
SUB-CONTRACTORS ON SITE:	
WCC HAR Counter	
EQUIPMENT ON SITE.	
HAB K:+	
WORK PERFORMED (INCLUDING SAMPLING):	6 Total Lead
Sampled Cleveland 2116 2133	
2134	
2138	
2(4)	
2158	
Shak 7256	3 Total lad
Ochman 1633	6 Total lead
18:00	
Edison 1708	
- 7052	
Sol Sampling HW SOP I Occumentation Aw SOP S Bering Abandonmethan SOP 7	
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NILTSS PDFI	
1 1 V A 1 HA071 DATE 4/15/90	۷
OSIO LINY L CIAGO PICCE	
QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	
_	
HEALTH AND SAFETY LEVELS AND ACTIVITIES.	
Modified Level D PPE	
Decon & Sampling performed	
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	
12- 10+11 / 11 4464 11/60	
Back used only accessed the	Ngh .
house	
SPECIAL NOTES,	
TOMORROWS EXPECTATIONS:	
Sample 10WA, GRANO, DELMAR, etc.	

BY Endoyist

A/16.192

A-E DAILY QUALITY	
CONTROL REPORT	WALTER BOTH COM TOWN TOWN
A Sur Despera	TELLO TO 22 22:50 1 10 10 10 10 10 10 10 10 10 10 10 10
COE PROJECT HAUGER TERRY BUCKHOLZ	Control in I from to
PROJECT IVI I I S PEFT	
Maria Madac # 00 M	HULLIOTTY OY LOT
CONTRACT NO DACW45-90-0-0008	
SUB-CONTRACTORS ON SITE:	
WCC Hab Crew#2	
ECUIPMENT ON SITE.	
HAB KIL	
WORK PERFORMED (INCLUDING SAMPLING):	
Sampled 1920 Bon.	on 6 Total Lead + 3 LQ
12)	·
1834	
2101	+31.0
Z119 V	+310+310
2151 Gran	
2167 Evan	7 KL 1
1415 Mad	
1920 Madis	7.7
1421 10m	+310+310
1423 Jown	
Sampling AW SAPI	
Ocementation AW SOFS	
Drum /An SOPE	7
Sampling 1AW SOPS Driver Artico 1AW SOPS Driver Alaundenment 1AW SOP	<i>t</i>
J	
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	ECIAL NOTES.
	Slymas
at El malla to	OBLEMS ENCOUNTEREDICORRECTION ACTION TAKEN: WHIGH THE THIRDIPS WHIGH THE THIRDIPS WHIGH THE THIRDIPS WHIGH THE THIRDIPS WHIGH THIRD W
	Sameling and duen purtomed
	ALTH MIC SAFETY LEVELS AND ACTIVITIES.
43 End due	brien 2 + 815 nozibaM asb1 awal 1sp1
4 3 lead dup	1 6112 (012 1 1012 1 1012

A-E DAILY QUALITY WEATHER BOOM CONTROL REPORT 17045 | 65 to 1 COE PROJECT MANGER TERRY BUCHHOLZ PROJECT NLTS JOB NO. WORK Order # 0021
CONTRACT NO DACW45-90-0-008 HUMIOTY SUB-CONTRACTORS ON SITE: de HAB Team #2 EQUIPMENT ON SITE. WORK PERFORMED (INCLUDING SAMPLING): 2264 1.

Same 1 - 7 - 7 - 1 - 1 - 2		4-17.92
The Work Older + 10031		
UALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)		
	<u> </u>	
EALTH AND SAFETY LEVELS AND ACTIVITIES.	r	
Modified level)	
1 \	rectard	
De con & semper	-	
ROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:		
HOBLEMS ENCOUNTERED		
None		
DECLA NOTES		
PECIAL NOTES.		
	c ob word o	nd driveway
FOR battery chips (Remote Aren Location)		
for battery chips (Remote Hrew Location)	as requesta	1 by resident
MP1727 & MP1729 will take WA Jargies		
Other Residents on 2200 Cleveland.		
211 Real to a day Cleverage		

J. 7

Ex X - State Scientist

ケーストフト A-E DAILY QUALITY WEATHER BUTT CONTROL REPORT COE PROJECT HANGER TERRY BUCH HOL Z TEMP PROJECT NLTS W 840 108 NO. Work Order = 0021 **YTIQIPICH** CONTRACT NO DACW45-90 - D-0008 SUB-CONTRACTORS ON SITE: EQUIPMENT ON SITE. HAB K:+ WORK PERFORMED (INCLUDING SAMPLING): 225° 11 11 11 Edisas 2138 Total Le. &

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LOSPO Work Carre # Origi	Q176 4-21-92
OUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	
	roles QA
2262 Clevelad - 11	11 + 3 Dups
2117 Ed:sen - 11	1 +3 Pups
	Sanalis Qt - 3 Dus
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SPECIAL NOTES.	
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CMORROW'S EXPECTATIONS	
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TOMORROWS EXP	ECTATIONS.	olo Gran	0 .	
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A-E DAILY QUALITY CONTROL REPORT WEATHER ≖∙ಜ COE PROJECT HANGER TERRY BUCHHOLZ TEMP PROJECT NLTSS W #40 108 NO. Work Order # 00.21 HULLIDAY CONTRACT NO DACW45-90 - D-000 8 SUB-CONTRACTORS ON SITE: ECUIPMENT ON SITE. WORK PERFORMED (INCLUDING SAMPLING): . 14 ... U Total Lea Samples Total Lea ι, 1(lc SI-SET _1_ 34 _3

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HEALTH AND SAFETY LEVELS AND ACTIVITIES.	
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SPECIAL NOTES.	
CMORROWS EXPECTATIONS	
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A-E DAILY QUALITY				
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PECIAL NOTES.	
MCRROW'S EXPECTATIONS:	

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A-E DAILY QUALITY · CONTROL REPORT COE PROJECT HANGER TERRY BURNEY Z PROJECT 116755 JOENO. WORK Order # DO 21 HUMICAY CONTRACT NO DACW45-90-0-0008 SUB-CONTRACTORS ON SITE: ECHIPMENT ON SITE. WORK PERFORMED (INCLUDING SAMPLING): 938 11 2041 State -١, 2024 Benton

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State 1436- Unable to s	apple all
gravel.	
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PECIAL NOTES.	
OMORROWS EXPECTATIONS	200 - 1400 Washingto
Midison + State (1000-1300), 10 10	200 - 14CU CJGSIINGIO
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PROJECT NLTSS FUFI	WIND 3
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SPECIAL NOTES.	
TOMORROWS EXPECTATIONS:	
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SPECIAL	NOTES.			
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BY Cynthin Penelle TITE Assist. Proj. Eng.

4-29-92 A-E DAILY QUALITY CONTROL REPORT WEATHER COE PROJECT HANGER TERRY BUCHHOLZ TEMP PROJECT NLTSS POFI WINO 108 NO. Work Order # 0021 HUTTO HUMIOTTY CONTRACT NO DACW45-90 - D-0008 SUB-CONTRACTORS ON SITE: ECUIPMENT ON SITE. WORK PERFORMED (INCLUDING SAMPLING): 16 /1-----

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CONTRACT NO DACW45- 96-D- 6668	1	X	illo marini	- Paris +	
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SPECIAL NOTES.			
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BY Cysthu Paulle TITE Ass, Proj. Eng.

A-E DAILY QUALITY CONTROL REPORT COEPPOSECT MANGER TERRY BUCH HOLE PROJECT NLTSS JOB NO. WORK Order # 0021 CONTRACT NO DACW45-90 - 0-0008 HUMIOTTY SUB-CONTRACTORS ON SITE: ECUIPMENT ON SITE. WORK PERFORMED (INCLUDING SAMPLING): 11 1. ٠ , د

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SPECIAL NOTES. TOMORROWS EXPEC	TATIONS Lineals Dela City Hall Public	nor 2 19th Cine Per	<u> </u>

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BY K Staff Scientist

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CONTRACT NO DACW45- 96	0-000						
SUB-CONTRACTORS ON SITE:							
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SPECIAL NOTES.	
TCMCRROW'S EXPECTATIONS:	
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BY C. Pavelha TITLE Asst. Proj. Eng.

5-1-92 A-E DAILY QUALITY WEATHER SUN CONTROL REPORT COE PROJECT HANGER TERRY BUCHHOLE TEMP W 1NO PROJECT_NLTSS 108 NO. WORK Order # 0021 CONTRACT NO DACW45-90-0-0008 HULLIDITY SUB-CONTRACTORS ON SITE: ECUIPMENT ON SITE. WORK PERFORMED (INCLUDING SAMPLING): 1300 840

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SPECIAL NOTES.		
CMCAROWS EXPECTATIONS MP 1727 & MP 1729	Kathy Andria (Sp	lit-Somples)
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HEALTH AND SAFETY LEVELS AND ACTIVITIES.	
NIA = Street Clothes	
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	
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- CAL Show	is due to Friday Afternoon
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and a gretty day.	
TCMCRROWS EXPECTATIONS:	
13 Hts SCHEDULED	

BY Cynthe Parelle TINE ASS. Proj. Eng.

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	DAY	S	4 1	1 "	14 7	12
A-E DAILY QUALITY						
CONTROL REPORT	WEATHER	Brote Sun	Ÿ	0.40	Ren	Snow
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CONTRACT NO DACW45- 96-D - 6698						
SUB-CONTRACTORS ON SITE:				. , -	-1/	
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Mobil Phone Personal Vehicle						
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WORK PERFORMED MICLUOING SAMPLINGE	unta I	71	(v)	SOP.	#11	
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Home Inspection Survey (HTS) Home Inspections Scheduled = 13 HIS	Athe on ot	A = 1	2 Co	molet	od=	12
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ER 1110=1=263 1 Oct 90. PROJECT - NLTSS PDFI REPORT NO. DBHO. Work Order # 0021 DATE 5-2-92 QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS) HEALTH AND SAFETY LEVELS AND ACTIVITIES. NIA = Street Clothes PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN: SPECIAL NOTES. TCMCRROWS EXPECTATIONS: ATS Scheduled

BY Cysthin Pavelher TITE Ass, Proj. Eng.

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A-E DAILY QUALITY		
CONTROL REPORT	WEATHER BOOK Sun Char Char Show	
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PROJECT NETSS PDFI	WIND SX MONT HOT PHOOT NO.	<u> </u>
JOB NO. WOCK Order # 0021		
CONTRACT NO DACW45-90 - 0-0008	HUMIDITY OF HOME HOURS	
SUB-CONTRACTORS ON SITE:		
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EQUIPMENT ON SITE.		
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WORK PERFORMED (INCLUDING SAMPLING):		
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DUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	
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PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	
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PECIAL NOTES.	
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BY Cynthin Pavelle IIT = A55, Proj. Eng.

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2007 / /2 /2 /2	# 0071		DATE.	<i></i>	
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CONTRACT NO.	DAC W4	5- 90-	11-10	994-	_	· (<u>'</u>	·		
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SPECIAL NOTES.	
TOMORROWS EXPECTATIONS:	
TOMORITOR O CALCO	
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BY Cother Parelle TITE Ass. Proj. Eng.

A-E DAILY QUALITY WEATHER BOTH CONTROL REPORT 77.20 50,75 To II COE PROJECT MANGER TERRY BUCHHOLZ TEMP PROJECT NLTSS POFI WIND JOB NO. WORK Order # 0021 ---CONTRACT NO DACW45-90 - D-0008 HUTB SUB-CONTRACTORS ON SITE: EQUIPMENT ON SITE. HAB K+ WORK PERFORMED (INCLUDING SAMPLING): 11 11 1 1 ١, 1, 2505 . . 11 IHW SOP#5 SI-EET_

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A-E DAILY QUALITY
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PROJECT NLTSS POFT WIND SI MOON HON PAGENTAGE
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CONTRACT NO DACW45- 90 - D - 0008
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5-18-92 QUALITY CONTROL ACTIVITIES INCLUDING FIELD CALIBRATE AS HEALTH AND SAFETY LEVELS AND ACTIVITIES. PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN: 1336 19th St: - Unable to SPECIAL NOTES. TO CARDAD DIRECTOR INC all subtained access 3 in Eagle Pork

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Occor AW SOFD) 50P	<u> エーー</u>	_ : : : : :		
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Surveying - Survey all beings for remo	te creas or	id Engle	LINK T	2	
- 010 ve 411	•	•		·	

3 QA Simples Q ZOZ Harrison Madisen & 1013 Grand Augliente Samples @ 1423 Madison &1013 Memorial Bock HEALTH AND SAFETY LEVELS AND ACTIVITIES. HAB Tram performed Survey Team - Level D PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN: None SPECIAL NOTES. Surveying will return to the in elevations for benchmarks 2230 Cleveland Stop all field work until further access TOMORROWS EXPECTATIONS No further access for residential proporties.

>) The Cacologist

ER 1110-1-263 1 Oct 90

	DATE		5/3	17/72	
	. OAY	S		"	为了了
A-E DAILY QUALITY	೮೬೪ ಕಟ್ಟ	المحد	Cinar)	Ren Isan
COE PROJECT LANGER Terry Buchholz PROJECT NLTSS PDFI JOB NO. Work Order #0021 CONTRACT NO DACW45- 90. D- 8688	MIMO MIMO MIMO MIMO MIMO MIMO MIMO MIMO	Fo 32 Suf Ory	Hoom X	SS-70 Pign Huma	Recort No.
SUB-CONTRACTORS ON SITE: Crim train. Consultants EQUIPMENT ON SITE. Survey in Equipment					
5.55 - 571 - 71					
WORK PERFORMED (INCLUDING SAMPLING):					
Sirveying of Remote Area an Sons	ls Road	(Far	mers ((કૃષિ)	
	benchmon	ļ. =			
Tied in 3 barings to closest				:	
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PROJECT	NZISS POFI	
mun.	NLTSS PDFI Work Order #0021	OUTE - 5/22/12
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<u> </u>	THE STATES	
HEALTH A	NO SAFETY LEVELS AND ACTIVITIES.	
	M I () of	
	Level D' PPE	
	Leog 1 D . , L	
	S ENCOUNTERED/CORRECTION ACTION TAKEN:	
PROBLEM	2 ENCOUNTEREDICONNECTION	
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SPECIAL N	OTES.	
TCMCRRO	WS EXPECTATIONS:	
	for our	perties which have been sampled.
	Finish w/ surveying for pro	SPECIAL STATES

EX Cyrthu Pavella TITE 185.5t. Proj Empires

6/8/92 X

A-E DAILY QUALITY				<u></u> -		
CONTROL REPORT	المارية (المورد الم	Bright Sum	X	rjaner sen	Higgs 	5.~
	TEMP	To 22	II:30	97.42	TO-45	€ w
COE PROJECT MUCER Terry Buchholz PROJECT NLTS'S PDFI	WNO	Sui	100	برگبا) A-00	on 140.
	HULLIDITY	Ory	7	HATTO		
JOB NO. WORK OFFET JOSE CONTRACT NO DACW45- 90- D- 0008						
		-,,-	, 			
Layne - Western & Woodward - (lyde Cons	ultan	18			
				HSA		
ECUIPMENT ON SITE. CME - 75 Dilling	19, 6	ment	4.0	,,,,,,,		
Split - spoon and other sum DPF and Dreed	Mind Edails	7712				
WORK PERFORMED (INCLUDING SAMPLING): Monitoring Well 109-92	Drill and	In	<u>.//</u>	,,,	-11	
Drill total depth 12 ft.	Did not	reac	1 4	tal de	ATA.	<u></u>
Ran out of time.				<u> </u>		
//dx V-a						
	<i>I</i>	1 5+				
Took Total Lead Samples a	5-6	et.				
	10-11					
Prior to drilling, steam dec	ned drill	<u>riq</u>	, H.	SA an	<u>d</u>	
Alax driling equipment.	·					
Grace Great						
Had site Setety Briefing.						
Sizon lad Toint Meeting we Uti	ity Compa	LIPS	to d	ear d	حنالنه	
8:30am Had Joint Meeting Will	19 Jan 19 19 19 19 19 19 19 19 19 19 19 19 19					
locations for Wells						
				. <u> </u>		
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				5.4-€ T		<u>&</u>

17 - 176 1 - 301 - 40

. EY Cythin Paulle IITE Assist. Proje Engineer

A-E DAILY QUALITY WEATHER BY CONTROL REPORT PROJECT NLTSS PDFI 108 NO. Work Order #0021 HUMB HUMIDATY CONTRACT NO DACW45- 90 . D - 0008 SUB-CONTPACTORS ON SITE: Layne-Western 75 Drilling Ro Rig and Equipment EQUIPMENT ON SITE. WORK PERFORMED (INCLUDING SAMPLING): 10,5ft to T.D. 70ft. MW-109-92 ID. steinless 0.01 slotted screen Took total lead spoon samples for lithology sample over screen interval (659-6751) (19.5 ft), sand would heave back in sand heaved 7 ft into augers. Stuck center Remove HSA and hex rods from hole, Clear out

	0.419		61	9/20	42	
	OAT	3 1	-	T ~	114	
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Brons Sun	Char	0	Am	500
	TEMP	To 32	33-20	\$2-70	70-45	ധര
COE PROJECT MANGER Terry Buchholz PROJECT NLTSS PDFI	WNO	S24	Moder	НФІ	Reco	ort NO.
DOB NO. Work Order #0021 CONTRACT NO DAC W45- 90- D- 0008	ниыюпт	Оу	Moder	unia]
SUB-CONTRACTORS ON SITE:						
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ECUIPMENT ON SITE.					<u>.</u>	
				• • • • •		
WORK PERFORMED MICLUDING SAMPLINGI: Added water top water during de	to all:	3051	40	10ff.		
	· I lind		·			
Used 500 pols, top waters						
Discussed of Joe Kissene decided to Mrs.	ke 68 Fl	T.D	<u>. S</u>	et sc	een	- 3.64
and riser. Set centralizer at 37-3			•			
Using I in tremie pipe, tremied 250	1bs 20/	40 (Hav	a Cob	rada.	Sand
Top of filter pack 52-53ft.		·				
70 0 0/ 77.7.		lonite	- 1	1.		
Drop slowly one 5 gallows of 3/x"	7-1	tonite	Pel	1643 1		
Let bentonite hydrologe over night		•				
During placement of filter pack and	benti p	ellet	s bu	mper is	<u>ρ HS</u>	<u> </u>
6 in at a time,		. 1.2				
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BY Cysthe Parke TIME Asst, Project Engineer

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Screen.				
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	To Real Property						<u> </u>
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		Water State					The 2
	A Ste	70 N 200E	APRODULE.	Bertana.			
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	PROBLEMS ENGOUNT	REDICORRECT		AE DATE	रहरीया ज्या	will we	
			17/16/				
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					Gilla Sanda		是基準
					100		
	SPECIAL NOTES						
The Mark		No. of the contract of the con			1912-19-X		
	The state of the s						
	TCMCRROWS EXPEC	TATIONS: STATI	mild Cas	ing filter	pack, and cx	ment MW	<u>-10192</u>
क्षा है। जो देखन को व				#1 12/5 PM			
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	The second secon						The second secon
	1	engiga sa salah sa sa Termin bahasa sa sa sa sa sa Termin bahasa sa					

1:0ct 90 -ALE DAILY QUALITY CONTROL HEPORT SUB-CONTRACTORS ON SITE: WORK PERFORMED (INCLUDING SAMPLING): Pumped 10go SMEET /

ERTI110-1-263

ER 1110-1-263 1 Oct 90-NLTSS PDFI Work Order # 0021 QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS) HEALTH AND SAFETY LEVELS AND ACTIVITIES PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN: SPECIAL NOTES. MW-108-92 TOMORROWS EXPECTATIONS: Drill and take samples from

By Cothia Paulse IIN = Assist Proje Engineer.

ER 1110-1-26

A-E DAIL Y QUALITY CONTROL REPORT FIGURE 100 1	SUB-CONTRACTORS ON SITE: Woodward-Clyde Consultants of Leupne-Western ECUIPHENION SITE TO ME TO ME TO STORE ECUIPHENION SITE TO ME TO ME TO ME TO THE TO	A: W/ 115A to 25 Ft. Der at every 5 ft interval	Smujick 12 & Acl O-14 Smujick 12 & Acl O-14 Smujick 12 & Acl 10-114 Smujick 12 & Acl 10-114 Smujick 12 & WL 20-114	At their level at 1851. It with split-spoon sample at 20-21ft had oil sheen on water in sail cultings. Tak 25-27ft split-spoon somple. Stapped dvilling for the day. Try to contact USACE-Omaha, Contacted Try to contact USA

ER 1110-1-263 1 Oct 90

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CONTRO	OL REPORT	WEA	THER SU			Ran Ran	S
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and the Constitution of the Constitution	Modified Electronic Also W	PA - 8019	a w	X and	destiff TPH-	INTRA	red
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and the Constitution of the Constitution	Modified Electronic Also W	PA - 3015 Il conduct	BTE	X and	destiff TPH-	INTRA	red
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(P.S. - Lost copy) 6/16/92
Remode copy. C. Pault

PRIJECT. NL/33 PUFI	DATE 6/12/92
OBNO. Work Order #0021	OUTE GITATION
OUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	
QUALITY CONTROL ACTIVITIES TINCEDURIS TELES	
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HEALTH AND SAFETY LEVELS AND ACTIVITIES.	·
Modified Level U	
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found huckgrant later Later	the day, r Howth + Safety Officer,
CONTRACTOR	
LEPA. White until further notice	e The area
SPECIAL NOTES.	
TCMCRROWS EXPECTATIONS:	
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BY C. Paulle TITE About Prog. Emquer

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~LIN ~!	Northed Level D PPE
	Dean PPE & Sanday Type 120 30 =16
ROBLEMS	ENCOUNTERED/CORRECTION ACTION TAKEN:
	None
PECIAL N	OTES.
CMORRO	INSEXPECTATIONS.
	Install that on Muley-12 1 to 8
	01.56
	

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ex Like me Grain si-

CONTROL REPORT COE PROJECT MANGER Terry Buchholz PROJECT NLTSS PDF! JOB NO. Work Order *0021 CONTRACT NO DACW45- 90. D- 8008 SUB-CONTRACTORS ON SITE:

SUB-CONTRACTORS ON SITE:
Woodward Clyde Consultants
EQUIPMENT ON SITE.
CME 75 Dall P. 61/4" HSA
Stanlow Strel 6 Splf Splf MARGIET
WORK REPEOPLED WAS LICITAD SAMPLING!
Install and C Flish mount cover on Mulli-92
Moved Elabelled drams to Taracore cilc
Began Ariting Nulling 92 Delled to 65'
Began Ariting Now 1714-12 De Nea to 05 Took total (rod analytical Samples from 0-25' Q.5' intervals I Sample & 65-67' in Severed intervals Whater level Q 19'
Inch total trust analytical strain in Severed interest
intervits to sample to to
CUA FOR TOUR BY
Sample 10's SMW10492 DALL
SMINICATE DOAL
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SI-EET 3

		+3 위ELD CALIBRATION		
HEALTH MO SA	FETY LEVELS AND ACTIV	ines. OPE		
			4P #6	
Decor	SAMPLY THE	sment TAU:		
	COUNTERED/CORRECTIO	N ACTION TAKEN:		
PROBLEMS EN	OUNTERED/CORRECTIO	1. 101	Washir to	deill rust
Sheared	Kelly Paten art extrasion	sion at oc.	cu) extension	6/19
65' W/	OF FAMILIA			·
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SPECIAL NOTE				
SPECIAL NOTE				
SPECIAL NOTE			even & rser.	Add Claus

BY E N. 14 ME /7000 ;

A-E DAILY QUALITY
CONTROL REPORT "LATIST SAN X
COE PROJECT LANGER TETTY Buchholz PROJECT NLTSS PDFI JOB NO. Work Order #0021 CONTRACT NO DACW45- 90-D-0008
SUB-CONTRACTORS ON SITE:
Whelez-d-Clyde, Layre-Western Drilling
1 Di Com USA 2" Abiles deel
EQUIPMENT ON SITE. CME-75 Drilling Ricy 64" HSA, 2" stainless steel Split-span sampler, PPE Equip. + Decens
split-spen sempler, FIL Lymp. + Decent
WORK PERFORMED (INCLUDING SAMPLING):
WORK PERFORMED (INCLUDING SAMPLING): Try to cetake solid-year ximple from 70-724. Receivery Jow - 4/10.
Received Jon 4 19.
T LI n' v In a stated wall screen (O.O. in sict size) at
Install 6. 2"x 10 H steinless stort riser pipe from 0 to ft.
Set Filter peck from 56.5 H to 70ft (T.D.) w/ I in PVC Trumie Pipe Filter peck material = 20/40 Colorado Ottano Sand. Used = 300 lbs.
W/ 1" tranic pipe pump bentante sturry (= 15 gals.) for bentante.
Dlus.
Prog.
W/ 1 trains sin pump coment good mixture, to surface.
Used a Q50 yes with 1 have (4711/fry) coment & D0/6s bestocks
Comment which marked to your world the procured to the had
Comment of the property of the state of the

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13741		S ELE D CALIBRATK	(NS)		
DIVATION CONTROL &	CTIVITIES (INCLUSION	371200			
				·	
HEALTH MO SMET	LEVELS AND ACTIVI	TIES.			
MULL IN	ed Level "D'	PPE			 -
			DFI SOP *	4	
Deur	Equip and PP	E IAW P	Dr. JCE		
PROBLEMS ENCOUN		ACTION TAKEN:			
PROBLEMS ENCOUN	TEREUROMICO				
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SPECIAL NOTES.		P. A. MU-2	W 111 (12)		
TOMORROW'S EXPE	ECTATIONS Lace Seven C.		W 111 (22)		
TOMORROW'S EXPE	ECTATIONS C.		A 111 12 2 2 2		

A-E DAILY QUALITY	waja Dielet	i de servi		~~~; ~~	i Cami	و معروض
CONTROL REPORT	MI, A. POPE	501		¥		<u> </u>
T . 11/-	TEMP	To II	32:50	क्रस्य	70-45	u (co
COE PROJECT UNIGER Terry Buchholz PROJECT NLTSS PDFI	W #40	234	1400	HQT	F•o	on No.
1.1. at Ander 4 DUAL	HUNIOTTY	Ory	Moder	Type		Ì
CONTRACT NO DAC W 45- 90- D- 0008			<u> </u>			
SUB-CONTRACTORS ON SITE:		1] · 			
Westerd - Clyde Con Loy	ne - Western	<i>Dr. l.</i>	(, <u>^</u>			
EQUIPMENT ON SITE. CME - 75 Drilling Rig	CH" HSA	sta	in less	steel		
2 in split-span sampler,	HNu n	paritur	ing cg	up.		
			- 			
WORK PERFORMED (INCLUDING SAMPLING):						
Plug + Alandon MW108-9	3	Ι.		<u> </u>		
With I" transe pix, Coment grow	+ poring	<u>で) 3</u>	1 .	\ \ 	241300	1. weter
Used 24 km (47165 big) cem	ent ; 50 1	OS P	ピカブハハバ	« mw-	ו אנו	
				C1 L		
Took observatory samples & MW-1	0217 4 1	11(D) =	<u>/U / .</u> 1	1 ,	1075	
floating substance in builer. I	to a Directly	0.1	MeGV	<u> </u>		
unter sample. Punible il a	green stair	<u>ر ج</u>	45.19	natect	MITTER	
rope in well.	<u>, </u>		17			1.5
MIN-IN appeared to hove I	10 fluation	TPY	oduct.	KY CI S	onton	Merio.
MW-1085 1000 dry. No Se	<u>.mple take</u>	<u>', n'</u>				
	· · · · · ·			 		
Drill MW-111-92 (1628 Delmer) to	10.47	·		· 1	1-
T. L Total land Anglytical Symples	trom C	35+	1 हा	3 11	INTERU	
Took 2 semples one serected in	ters. 1	0. 6)# :	1 65	6/1	17.
Mixed samples - same lithals						
To to of the Top of	The and w.	400	J 4	757.		
Analytical Samples ID " SMWIII	924 ACL		_0	1++		
	17 A. A. L. P.		<u>5</u>			
Smc ///	わかるしん		16			
	1041 VI		<u> 15 :</u>	11.4		
5176-11/1 5176-11/1	197 (2		<u>) (</u>	219	/	
5710 1/192	74.4.XL	الو- وكار	(f1, ^{S1}	∺€€T <u></u>	<u> </u>	<u>s_</u>

MATSO POTE QUALITY CONTROL ACTIVITIES (INCLUDING FIELD DALIBRATRING) HEALTH AND SAFETY LEVELS AND ACTIVITIES.

PPE: Majified "D" Level Decen Sarping Equipment and PPE TAW SOF 6 PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN: None SPECIAL NOTES. TOMORROWS EXPECTATIONS Install will screen, reser in MUIII-92

er C. Janka un= to et troise

A-E DAILY QUALITY CONTROL REPORT

COE PARSIECT LANGER Terry Buchholz.

PROJECT NLTSS PDFI

JOB NO. Work Order #0021

CONTRACT NO DACW45- 90-D-0008

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TEMP	To 22	32.50	95-20	73.45	65 j.c.
w r io	Sui	Moour X	يركبو	Reco	M MO
HUMIDITY	07	Moder	HUTTED X		

SUB-CON	TRACTORS ON SITE:
	Dodoerd - Clyre Conclinate
ECUIPME	NT ON SITE.
·	Stainless steel beiler, Decon & Sampling Equipment; HN:
YORK PE	RECORDED (INCLUDING SAMPLING):
	Scripting Country to in Part 178-92 Boring
	Take Din stainless bailer and sample top 2 ft of
	ground water inside of 6"4" HSA.
	Ell 3 Line Form Cha Jar
	Fill V - 40 pt viels of prescriptive
	Visible hydrocorbon sheen in samples.
	SI-€E1 □

	and the control of th	
•	Work Order # 0221	
	Work Order Old	
	ONTROL ACTIVITIES (INCLUDING FIELD CALIBYA 14 M.)	
3/2.11.31		
	OTH #TICS	
EALTH A	YD SAFETY LEVELS AND ACTIVITIES.	
	15 DOF	
	Mullian Lord "D" PPE	·
	TEW PORT SOP 6	2
	Deux PRE & Simpline Egur IRW PDIE SOP &	
ROBLEM	S ENCOUNTERED/CORRECTION ACTION TAKEN:	
	None	
	V-308	
	N-3nsc	
	IV-SAX	
	N-3rsc	·
	N-Svc	·
	N->vc	
SPECIAL N		
SPECIAL N		
SPECIAL N		
	NOTES. H.N. Rauding below background.	
	NOTES. H.N. Rouding below background. OWS EXPECTATIONS	
	NOTES. H.M. Reading. below background. OWS EXPECTATIONS Plug MW-108-72	
	NOTES. H.N. Reading below background. OWS EXPECTATIONS Play MW-108-72	
TOMORRO	NOTES. H.M. Reading. below background. OWS EXPECTATIONS Plug MW-108-72	

BY Charles THE HE T. T. Programme

Samples 700 9 . (V.) + **FUNIOUY** Ć, A Wischnorth HAGNA 1245 13 th 8000 S. 45077 74.5.95 000 هر لمايامة CONTRACT NO DACH 45-116 M CHATTER CO. COUPLENT ON SITE. 3 at

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outer - Charles Odes	is coal	UTE	
and Warte Order			
UALITY CONTROL ACTIVITIES	(INCLUDING FIELD CALIBRATIONS)		
	1201 Washington	20 A 2	3 12 3
	1301 Constitution		i i
		···	
			
EALTH AND SAFETY LEVELS A	WO ACTIVITIES.	el "D"	
	Modified les		
		3	D-ARC
	Decen of Sa	mplin Pan	
PROBLEMS ENCOUNTEREDICC	PRECTION ACTION TAKEN:		
HOGEEMS CITES			
esselvi NOTES			
SPECIAL NOTES.			
SPECIAL NOTES.			
SPECIAL NOTES.			
	S		- 2
SPECIAL NOTES. TOMORROWS EXPECTATION:			(W 33)
	S. Frank Yar		1423 _y
			/W33 _/
			1433 _y

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and thorrespond

	DATE	6	-22	1-97		
	0AY	S	之门	T~T	TH F	S
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Svert Sur	X	0	Ran	Snow
COE PROJECT MANGER TERRY BUCHHOLZ	TEMP	To 32	32.50	92%	70-45	ಚರ
SPOJECT NUTHRACORP	W#10	X	Moder	HUTHO	Reco	xt NO.
JOB NO. 89MC/14V W.O. #0021 CONTRACT NO DACW 45-90-D-0008	HUMIDITY	X				
SUB-CONTRACTORS ON SITE:	·					
Lampallestern	1. 4.			1.0		
(2" Submersible Pump;	electr	<u>c</u> 9	ener	1 10()		
EQUIPMENT ON SITE. 750cm	r19					
CME 62 CF AIV DUI						
WORK PERFORMED (INCLUDING SAMPLING):						
1) // D /cooht - M	11/-1//	-92				
Well Developmen - M - removed ± 600 go	7.7	_	wate	· ^ .		
INSTALL FLUSH MOUNT WE	ell pro	tec.to	CBY	WE	24_	
MW-104-92	<u>'</u>			· · · · · · · · · · · · · · · · · · ·		
						
·					<u>. </u>	
			75		· 	
USACE Rersonnel (Neur From 1:30 - 2:15 PM	1 + (a)	Thy_	عرت	on si	<u>e</u> _	
From 1:30 - 2.15 PM						
the second secon						
			Sr-	€ET	_ 3 _	2

PROJECT NUTARACORP PDFI	REPORT NO. / 27 01
1.10-0021	OUTE_6-22-92
OUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	
	Weter Oct Ty Meter
Calibrated Horiba U-10	Waler Quality Ment
	·
HEALTH AND SAFETY LEVELS AND ACTIVITIES.	
Modified level "D"	CDAP SOP'S
Decon in accordance with	CDAP SOP'S
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	
PROBLEMS ENCOUNTEREGOS	
SPECIAL NOTES.	
Wolf Development as follows: Rump 200 gallons, surge Rump 200 gal	llons, surge, pump 200 galo
Primp 200 gallons, Strige 124	
TCMCRROWS EXPECTATIONS:	W-111-92
Complete Vevelupment of	W
Begin development of MW	-109-92
Begin aever opher	

BY David Pate TIRE Project Geographyst

ER 1110-1-063 1 Oct 90

OATE	6-23-92
YAO .	S M Y W DH F S
A-E DAILY QUALITY CONTROL REPORT WEATHER	Brozz Char Overcast Run Snow
COE PROJECT MANGER TERRY BUCHHOLZ/Gene Luitemp PROJECT NUTARA CORP WIND JOB NO. 89MC 114 V W. O. # 0021 HUMIDITY CONTRACT NO DACW 45-90-D-0008	To 32 32-50 50-70 76-85 45-40 Set Mooer Hop Recort No. Dry Mooer Humd
SUB-CONTRACTORS ON SITE: Layne Western	
EQUIPMENT ON SITE. CME-,65(2)ATV 2" Submersible Pump + Gen	ierator
WORK PERFORMED (INCLUDING SAMPLING): Complete development of 7:30 AM-1:45 PM	MW-111-92
Start Development of MW 2:00 PM -	
-	
	110 TW 142
	SHEET 1 3F &
	SHEET F

2-97
3-92
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on
3 7
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BY DYFALD

_ TIRE Roy. Geologist

ER 1110-1-263 1 Oct 90

	DATE	6	-2	4-9	7	
•	OAY	S		%	HF	S
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Bront Sun	× ×	Overcome	Rush	Snow
COE PROJECT MANGER TERRY BUCHHOLZ PROJECT NUTARA CORP JOB NO	TEMP WINO HUMIOTTY	<u></u>	75-20 12-20	Hon Hond	70-45 F400	1 × 0.
SUB-CONTRACTORS ON SITE: Layne Western						
<u></u>						
EQUIPMENT ON SITE. Dr. / rig - CME-75	Gen	V ecato	2 V			
WORK PERFORMED (INCLUDING SAMPLING):						
Developing MW - 10	09-9°	2				
				:		
-						
						
			C 1(2	ET /	- JF _	2

ANECT. NLTSS	DUTE 6-24-92
$\omega = \omega = \omega = \omega$	OLTEOLTOLT
OUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	
	star Quality Meter
Calibrate Horiba U-10 Mu	TEV COULTY THE
Calibrate Orion ph meter	
	·
HEALTH AND SAFETY LEVELS AND ACTIVITIES.	7)
Modified (evel "D	
H+S and Decon in accordance	e with CDAP
Hts and Decon In according	Procedines
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	
PROBLEMS ENCOUNTERED OF	
ance in NOTES	
SPECIAL NOTES.	
TOMORROWS EXPECTATIONS:	of MW-109.
Complete Mustage 92	
Develop 104-92	many state of the second

BY State TIRE Proj Geologie

	DATE 6/25/92
	OAY S W I W P F S
A-E DAILY QUALITY CONTROL REPORT	WEATHER SON CONTON Ran Show
PROJECT MANGER Terry Buchholz/Bero L PROJECT NLTSS PDFI 108 NO. Work Order # 0021	HUMIDITY ON MOON HUMA TEMP To 32 32-50 50-70 70-45 45 45 40 HOMEON HUMIDITY ON MOON HUMA HUMIDITY ON MOON HUMA HUMIDITY ON MOON HUMA
CONTRACT NO. DAC W 45- 90 - D - 8688	1
SUB-CONTRACTORS ON SITE: Woodward - Clyde Cons	utents
Layne-Western	
EQUIPMENT ON SITE. ATU LME - 750, Stain	les Steel Bailer, Surge Block;
Submersible Pump, generator	·
WORK PERFORMED MICLUDING SAMPLINGS: Development of MW-109-9	2 Continued.
•	
Bailed 5 x more well volume	s (≈40gals) & Water Quality
did not clear up.	(USACE geologist) of problems.
Notified Mike Klosterman As per discussion considered	
Total amount of water bailed	and pumped from MW-109-92 =
18104 Anothin of	1 (2350 gal
	:
_	
	1 2

PRIJECT. NLTSS PDF1	ABORT NO.
DBNO. Work Order #0021	OUTE 6/25/92
DOBNO. WORK UTGET DUG.	
QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	
1 7 1011 /C	dectivity Meter.
Calibrate Horiba Turbidity/Co	
	·
Calibrate Orion p. H. meter.	
HEALTH AND SAFETY LEVELS AND ACTIVITIES.	
m l'L'al louel D	
	701 mp *6
Decon a sampling equipment and PPE	"THM "SOF B
Jessi, Marie Carlotte Control of the	A SANS
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	
·	
SPECIAL NOTES. Joe Kissane visited on site	during problems
SPECIAL NOTES. Joe rissone Usines of development.	
•	
and the first of the second se	
THE	
Day 100 101 100	
	The South Mark of South

BY Cyrthi Paicha TITE Assit. Proj. Engine

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	DATE		126	192	····	
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A E DAW VOLIALITY						<u> </u>
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Broti Sun	X	Overcom	Ren !	Snow
- 0 111 Km/	TEMP	To 32	32:50	50-70	792	15 vo
COE PROJECT HANGER Terry Buchholz Gene Lui	WINO	\$ *	Moder	нфт	Recort	NO .
Mach Ander #0021	HULLIOTTY	07	400	Hump	1	
JOB NO	.					
SUB-CONTRACTORS ON SITE: Woodward - Clyde Consultants						
10000						
EQUIPMENT ON SITE.	·				· ·	·
CME - 750ATV Rig , Stainle	st Stee	Bai	ler,	Surge	Block,	
Submersible Pump, de nevator			· · · · · ·			
WORK PERFORMED (INCLUDING SAMPLING):						
Developed MW-104-92				-		
720	4	1:11:	- 1	wid.		
Recovered in pumping 720 gal	lans of	Or CILL	3	:		
1 1 741	PDFI	. 50	* 9c	a .		
Pumped and surgedure IAW	FVI					
a total of water	for	4 1	20,	in to		
Pringed 1210 pols that at water	10					
C' C who Sho	ped pur	Ding 1	when	weter	gualit	4
(Control of the control of the contr	7	τ ,		·		
Bailed 10 well uplames (2)	80gals)	المناء	der	qualit	4	
Dailed to dail the	Turbidi	tu 3	180	Mens.	<u>'</u>	
beginning to dear. New					· ·	
Will call Mike Klosterman	for	furt	her i	rstruct	70~	
en Monday.						
Sh Tonetta						
			+ 9 d.	*.5		
						\dashv
			<u> </u>	EET _	- J 6	<u></u>
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NITSS PDFI	ABORT NO
MET.SS PDFI Work Order #0021	OUTE 6/28/92
DB NO. WOTO COLORS ESTA CALIBRATIONS)	
OUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	
Calibrate Horiba Turbidity/Condu	tivity Meter
Calibrate Horiba Turbiaity	
CW 1 2 11 mater	
Calibrate PH meter.	
	·
	·
HEALTH AND SAFETY LEVELS AND ACTIVITIES.	
Modified Level "D"	
DOF	TAW SOPA6
Decon sampling equipment and PPE	
TAXEN:	
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAXEN:	•
Nong:	
·	
SPECIAL NOTES.	
TCMCRROWS EXPECTATIONS: Complete Development	f MW-104-92
Complete Development	The second second
Mill of rive 2-3 bornes at	Remote Fill Area - Missouri
Drill w rig 25 author a	Aue,

BY Cynthus Paulton TITE Assit, Proj. Engineer

(Communion Sheet)

ER 1110-1-263 1 Oct 90

	DATE		6/20	1/92	
	. 044	S	7	177	TH F S
A-E DAILY QUALITY CONTROL REPORT	ૡૹ ા ન્યું લ	Bron Sun	Car	0.00	حدي بعدا
COE PROJECT HANGES. Gene Lui	TEMP	70 32 604	7.50	92-70 Pon	F-001 NO.
PROJECT NLTSS PDFI JOB NO. Work Order #0021 CONTRACT NO DACW45- 90-D-0008	HUNIOUTY	Ογ	X	Huma	
SUB-CONTRUCTORS ON SITE:	· · · · · · · · · · · · · · · · · · ·	•		·	
Woodward-Clyde Consultants					
EQUIPMENT OF SITE. CMF - 750 ATV Right	4'4 H5+				
Stainless steel bailer + split - spoon		<u> </u>			
STATISTICS DAILY V AF SPACE					
WORK PERFORMED (INCLUDING SAMPLING):	·	·			
Finish developing MW-105	1-92				
Bailed additional 5 well u	lumes			· · · · · · · · · · · · · · · · · · ·	
Cordactivity, pH, and, temp		1:14	stab	lized	
1				:	
Turbidity = 24 Ntus - last	a reading	<u>sam</u>	<u>bler</u>		
With 2" x 24" stances sol	t-spoon s	anple	r ta	بو	
TCLP-Pb samples in 3 borings for	Remote F.		rea o	* AF.	
located at Missouri Ave.					
Bottom of fill material in	each bur	inc	luc s		
approximately 2ft deep.	-Br			•	
طح الزر					
Relocue Rig. All Rig	work com	pleter	d for	PDF	<u></u>
) 4			· North de la		
					
			SHEE.		, 3

PRIMECT NL	TSS PDFI	явроят но	6/29/92
DENO Word	Order # 0021	OUTE	
20307922579263	STIVIT (IS INVOLUCINA FIELD CALISENT)	34.5)	
Calibrate T		. i.er	
Calle all	urbidity, pH, + conductivity	Y METER,	<u> </u>
			
UE II TI I I I I I I I I I I I I I I I I	CVCI C AND ACTIVITIES		
	Level'D"		
Steam clean	a rig IAW SOP *6		
Decan 4 5	ampling equipment & PPE I	AW 50P *6	
PROBLEMS ENCOUNTE	RED/CORRECTION ACTION TAKÉN:		
None			
		<u></u>	
· .			
SPECIAL NOTES.			
· · · · · · · · · · · · · · · · · · ·			
CMCRROWS EXPECTA	TIONS: None -		
			
_			1

BY Cyntha Pavelha TITE Acrit. Proj. Engina

	DATE 7/22/92
	OAY S W I W IH I S
A-E DAILY QUALITY	
CONTROL REPORT	WEATHER Sun Char Overcas Ran Snow
	TEMP TO IZ 12.50 50.70 70.45 65.00
COE PROJECT WANGER DOFT	WIND Still Moore High Recort No.
PROJECT NLTSS PDF 1 JOB NO. Work Order #0021	HUMIDITY OY MOOK HUTTO
CONTRACT NO DAC W 45- 90 - D - 0008	
SUB-CONTRACTORS ON SITE:	
Woodward Clyde Consultants	
EQUIPMENT ON SITE.	
Hermit Data Logger	
THE PARTY OF THE PARTY.	
WORK PERFORMED (INCLUDING SAMPLING):	
Anily testing of wells	MW 103-91
Aguifer testing of wells	MW 104 - 92
•	WW 109-92
	MW 111-92
· · · · · · · · · · · · · · · · · · ·	
Slug Testing 1AW 800 4	
Documentation And SOP 5	
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w Work Order OULI	
ALITY CONTROL ACTIVITIES (INCLUDING FIELD CAL	IBRATIONS)
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ALTH MO SAFETY LEVELS AND ACTIVITIES.	evel D PPE
Decon performed	****
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TO SECTION ISTON TA	KEN:
OBLEMS ENCOUNTERED/CORRECTION ACTION TA	KÉN:
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PECIAL NOTES.	
PECIAL NOTES.	
PECIAL NOTES. CMCRROWS EXPECTATIONS:	
DMORROWS EXPECTATIONS:	

BY E- D. Pay TITE bedog: 3+

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	. 047	S	ž T	T**T	भि	S
A-E DAILY QUALITY CONTROL REPORT	WEATHER	Bræt Sun	Char	0-0-	Ren	Snow
	TEMP	To II	22:50	50-70	70-45	مونه
PROJECT MUCER SEAR LIU PROJECT MLTSS PDFI	W#YO	S2xl	Moder	汊	Reco	X1 NO. ,
JOB NO. Work Order #0021 CONTRACT NO DAC W45- 90- D-0008	HULIOTY	Ογ	Hoose	Huma X		
SUB-CONTRACTORS ON SITE:						
Wadward-Clyde Cons.		· 				
· · · · · · · · · · · · · · · · · · ·		<u></u>				
EQUIPMENT ON SITE.	le Pump;	end S	ampli,	s Équi	DMEL	1
Stainless Steel 2" Lailer, Submersib			7	T //		
WORK PERFORMED (INCLUDING SAMPLING):						
	•	<u>·</u>				
Sample Groundwater Wells						
MW- 106D						
MW - 107D.				<u></u>		
MW-111-92						
MW- 101 MW-112 QC Field	I PL.L					
7,00						
110 110						
Sampled wells IAW SOP	#3					
		<u></u>				
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			S۲	ET /	_~~-	<u> </u>

	NLTSS PDFI RECATION.
DEST.	Work Order # 0021 QUE 7/13/92
CM	Word Order Journ
JAL ITY	CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)
	OP - MINITED DEPRESE
	MD 112-72CFF FIELD Blank + Tric Blank
	17(1) 112 13.
(DA - MW 107-D MW 113 Field Blank + Trip Blank
	DA - MW 107-D MW 113 Field Blank + Trip Blank
	TO LICENTIES
ALTH	MO SAFETY LEVELS AND ACTIVITIES.
	Modified Level "D"
	Decon Sempling Equip & PPE IAW SOP #6
	Dies Simpling Equip & PPE IAW JUT
	DECOX SOFT TI
ROBLE	MS ENCOUNTERED/CORRECTION ACTION TAKEN:
	Could not sample wells
	MW-1065 Well was 819
	MW-1055 Well was dry
	MW-105D Well complex well.
	Ne in
PECIAL	NOTES.
	7.7016
CMCRI	ROWS EXPECTATIONS: MW - 1075
	V. 4.11(4) (A.1(1/3) (A.1)
	1/10/10/
	MW - 107-12
	MW-109-92

BY Cynthe Paulke TITE Asst. Project Fry.

ER 1110-1-263 1 Oct 90 1

	DATE	.7	114.	112				
	OAY	S	<u>- </u>		H	<u> </u>		
A-E DAILY QUALITY						_ <u> </u>		
CONTROL REPORT	WEATHER	Brons Sun	اسبن الم	X	R≥n	Sno-		
COE PROJECT LINGER Gene Lin	TEMP	To II	32.50	50-70	, O. 12	ಟ ಹ		
BROJECT NLISS PUFI	W#NO	Ħ	Moonr	5	β-α	n 140.,		
Work Order "OUd!	HULIOTY	Ογ	Moder	X				
CONTRACT NO DAC W 45- 90- D- 0008								
SUB-CONTRACTORS ON SITE:								
Woodward - Clyde Consultants								
2: " 1: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1:	1 1	_ L		·				
EQUIPMENT ON SITE. 2" + 3/4" stainless steet	Daller	Subr	مري به ر	Spire				
& sampling equipment.								
WORK PERFORMED (INCLUDING SAMPLING):								
Groundwater Sampling								
Purge & Sample Wells	•							
Parge & Jeppe ene								
mw - 1075								
MW - 104								
MW 104-92								
MW-109-92								
	0 \$ 0							
Sampled wells IAW 50	F 3							
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NLTSS PDF1 REPORT NO	./
OSNO. Work Order #0021 DUTE 7//	4/12
OSNO Word Orall Oval	
OUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	
Collected Samples for wells	Dugliete
MW-104-92 Matrix Spike/ Matrix Spike	Usf · · ·
MW-109-92 QA	
HEALTH AND SAFETY LEVELS AND ACTIVITIES.	
Modified level "D"	
100 TOOL SAP # (
Decon Sampling Equip + PPE IAW SOP #6	
OCCUPATION OF THE PROPERTY OF	
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAXEN:	
MW-1075 - Due to tight riser pipe use 3/4" sta	inless bailer
MW-1075 - Due to tight riser pipe use 17 sie	
to purge of sample,	quents
Eiled Toling that was from por surpring	200.00
L. Lall Nomboled (COTTA)	•
MW-102 Unable to sample. Well was dry.	
7.10	
SPECIAL NOTES.	
37 COM CONTRACTOR OF THE PROPERTY OF THE PROPER	
TCMCRROWS EXPECTATIONS:	•
Mω - 109	
MW-110	
MW-108D	
MW-103-91	

BY Cynthe Paulte rin = Assit, Proj. Engin

ER 1110-1-263 1 Oct 90

na.	·F	7/15/	92					
OA'	_	ш		TH F	 S			
A-E DAILY QUALITY		16) 16	h	Ren	15			
CONTROL REPORT WEATHER	Sun Sun	Char	X	Мъл	Snow			
COE PROJECT MANGER GENE LIN	ToI	2 22.50	50-70	, our	45 vo			
PROJECT NL/33 PUFI	SH	Hoose	HØI	A-CX	M 140. 1			
wark Order "OUS! HUMIOT	107	Mooer	Hump					
CONTRACT NO_PINE II								
SUB-CONTRUCTORS ON SITE: Woodward - Clyde Consultants			•					
Whodward Cityle Consuming								
EQUIPMENT ON SITE.			1-	// 				
2" stainlex steel bailer & submersib	e pu	m a	nd Samp	<u>/Ing</u>				
WORK PERFORMED (INCLUDING SAMPLING):								
Finish Groundwater Sampling		:						
, ,	<u> </u>							
Punge + Sample Wells JAW SUP #3.								
		·	:					
Sample: MW-108D								
MW-109								
MW-103-91		 						
MW-110								
-	<u> </u>							
	· · ·	·	<u> </u>					
								
			667					

RUECT. NLTSS PDF1 RECATION.	1: 1:0
Work Order #0021 Oute7/8/	15/92
8 NO	
DUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS)	
Field Bkink = WMWIN-10GE OCW	
Trip Blank = WMW114-10660TB	
MW-108 Field Duplicate	
MW-103-91 MS/MSD	
7100 740 7	
EALTH AND SAFETY LEVELS AND ACTIVITIES.	
Modified Level "D"	
Modified Level D	
Decon Sampling Equip + PPE IAW SOP 6	
Decon Sampling Equip VIII	
/ /	
TON TIVEN	
PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:	
	Dle.
77777 (10)	
Mul-103 Well Riser is bent over at surface. Unable to sample.	
M1.1-103 Well Riser is bent over at sailact	
Unable to sample.	-
SPECIAL NOTES.	
SPECIAL ROTES.	
	,
Oursloted all Groundwater Sampli	<u>nq</u>
TCMCRROWS EXPECTATIONS: ("AMPIETED ATT GTODATES	<u>/</u>
	·

BY Cysthe Parthe Tin = Asoit, Page Engine

		DATE	8/	1219	2	
	•	OAY	S	u T	ΪŽΪ	H F S
A-E DAILY QUALITY CONTROL REPORT		WEATHER	Brçri Sun	Cur	0-0-	Ran Snow
Programme 1 in		TEMP	To 32	12.50	50-70	المحادث
COE PROJECT LINGER GENE LIN	- -	W 1NO	Sui	Moor X	нфл	Recort No.2
JOB NO. Work Order #0021 CONTRACT NO DAC W 45- 90- D- 0008	-	HUMIDITY	Ογ	X	Hump	
CONTROL	<u> </u>					
SUB-CONTRACTORS ON SITE: WOODWARD - PLYDE CONSULTANT						
· · · · · · · · · · · · · · · · · · ·						
EQUIPMENT ON SITE.						
. HAB KIT						
WORK PERFORMED (INCLUDING SAMPLING): SAMPLED 1933 GREND -		71.792 4	<i>69</i> 0	5m	PLES	
5000 - 1933 GRAND -	<u> 6 1</u>	שו יבוני	2 40			
1340 MADESON		NA C	1=70-0	5m	10,55	
1348 MANTSDN -		. //	<u>"</u>	<i>γ</i> .		
922 GRAND	3	"	11	71		
1712 DELMAR	6	71	4.1.1	,,		
2033 DET MAR	6		"	7,		
2240 STATE 2238 STATE	6	/1	11	4		
2208 BENTON	6	/ •	/,	",		
waya						
•			•			
SAMPLED SOTI IAW S	we.	#/				
DECON" EQUIPMENT DAW	JUP	= (0	<u> </u>			2
ABADONED PORSULS TAW	SUP!	<u> </u>				·
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PRIMECT NLTSS POFI	REPORT NO.
MUTSS PDFI DOBNO. Work Order # 0021	OUTE_8/12192
CUALITY CONTROL ACTIVITIES (INCLUDING FIELD	CALIBRATIONS)
1933 GENERY - SANGERTS	3 Trace in un decorrection
1	3 TODA 1 -DA GUNTTY - WE UP
	Assurance
HEALTH AND SAFETY LEVELS AND ACTIVITIES.	
MODIFIED / EVEN "D"	
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ORTEK
QUALITY ASSURANCE
PROGRAM MANUAL

Revision 0
Date November 15, 1991
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			3.5	Laboratory QA Officer	3	0
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IOTES: NEESA: Naval Energy & Environmental Support Activity

HAZWRAP: U.S. Department of Energy Hazardous Waste Remedial

Actions Program

COE: U.S. Army Corps of Engineers

LQAP: Laboratory Quality Assurance Plan

CDAP: Chemical Data Acquisition Plan

QAPjP: Quality Assurance Project Plan QAPM: Quality Assurance Program Manual Title ORTEK QUALITY ASSURANCE PROGRAM MANUAL Revision * 0

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<u>5.</u>	Wet Chemistry SOPs (WC1-28)		
<u>6.</u>	Metals SOPs (M1-10)		
7.	Organics SOPs (01-9)		·
8.	Extraction SOPs (1-8)		
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1.0 INTRODUCTION

Quality assurance (QA) is a planned system of activities that will provide a quality product. ORTEK's product is environmental data. The purpose of this QA manual is to provide each ORTEK employee with the requirements necessary to produce defensible environmental data of known quality.

The precision, accuracy, completeness, representativeness and comparability of environmental data produced for our clients, must be consistently evaluated and documented in accordance with this manual. Personnel responsible for implementation, documentation and inspection of QA activities are defined by providing accountability for quality from sample receipt through data reporting and sample disposal.

This QA manual is written in accordance with the following established guidelines as they apply to analytical laboratory measurements:

"Guidelines and Specifications for Preparing Quality Assurance Program Plans", EPA QAMS-004/80, EPA-600/8-83-024.

"Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans", EPA QAMS-005/80, EPA-600/4-83-004.

"Guidelines for the Preparation of Standard Operating Procedures (SOPs) for Field and Laboratory Measurements," US EPA Region V, March 16, 1989.

"Final Standard Quality Assurance Project Plan Content Document," US EPA Region V, June 1989.

"Chemical Data Quality Management for Hazardous Waste Remedial Activities," Department of the Army, US Army Corps of Engineers, ER-1110-1-263, 1 October 1990.

"Content Requirements for Quality Assurance Project Plan," US EPA Region V, January 1989.

"Requirements for Quality Control of Analytical Data," DOE/HWP-65/R1, July 1990.

"Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program," NEESA 20.2-047B, June 1988.

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This QA manual addresses the 16 essential elements of an EPA Quality Assurance Project Plan (QAPP), the 19 elements of a DOE, NEESA, and HAZWRAP Laboratory Quality Assurance Plan (LOAP) and the 9 topics of a COE Chemical Data Acquisition Plan (CDAP). The title page and table of contents were not considered separately numbered sections. As this ORTEK QA Manual is not intended to be project specific, the "project" is considered to be the laboratory. Accordingly, the project description and project organization and responsibility elements describe ORTEK's operations and QA structure only.

This document is considered a "manual" as it is intended to be easily handled and referred to often. It is written for use and not disuse by ORTEK staff. The usual and worst fate of QA documents is to lie on a bookshelf collecting dust and to be trotted out during audits or to impress clients. This manual is not intended to impress, but to express the quality control requirements of the laboratory clearly and succinctly for all to follow.

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2.0 LABORATORY FACILITIES AND OPERATIONS

ORTEK has laboratory facilities separated into two buildings, located at 2496 West Mason Street (Building 1) and 1609 Western Avenue (Building 2), in Green Bay, Wisconsin. The facility floor plans are depicted in Figure 0. The facilities are less than a mile apart and are divided into two major functional areas: Building 1; Sample receipt, preparation and inorganic analysis. Building Organic's instrumentation and administration. This arrangement has reduced contamination of samples by laboratory solvents and provided adequate space for growth, storage, and training programs. Approximately 16,000 square feet is devoted to laboratory and administrative operations, and another 2,000 square feet is utilized for training programs. The training laboratory includes a classroom and instrumentation laboratory.

2.1 Equipment

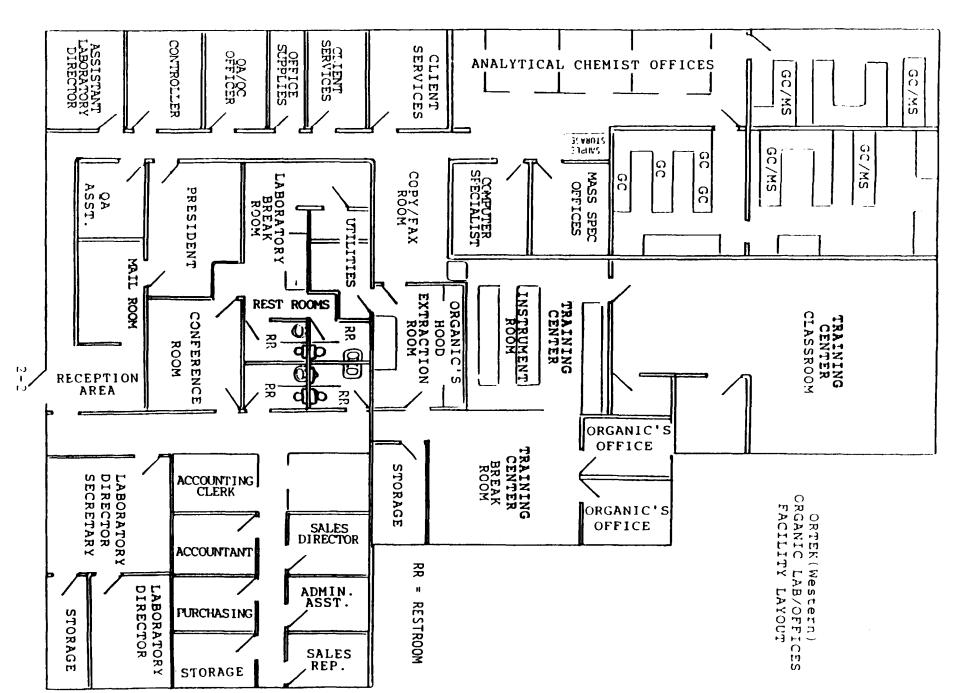
Major instrumentation available for analytical operations is listed in Table 1. Operation of this equipment is documented in an SOP dependent on the method of analysis. Support documentation for the equipment listed includes the manufacturers operation manuals and bound logbooks that record service and maintenance. Calibration results specific to the analyses are included in each client project file for GC, HPLC and GC/MS analyses.

Lachat Autoanalyzer, FTIR, AA and ICAP calibration results specific to the analyses are cross referenced by date to the samples, and are contained with raw data in batch run number logs kept in chronological order by each section supervisor. Section 7.0 details the instrument specific calibration requirements.

Material Procurement and Control

2.2.1 Purchasing

The quality of materials ordered are defined by the reference analytical method included in the Standard Operating Procedure, and verified by the QC Officer. A purchase order (PO) should specify the quality needed, and once received the PO should be used to cross check that the materials received are of the appropriate quality. All materials should be dated upon receipt and again upon opening. An inventory card system tracks the specific materials ordered.



LAV LAY STORAGE/MECHANICAL STORAGE METALS GPC CLEAN UP SUPERVISOR **ICAP** CHEMICAL AND GLASSWARE STORAGE EXTRACTION WORK COUNTER OTUA. ANALYZER TCLP ICAP WORK COUNTER 2 E AA-GRAPHITE T EK(K. AA-Zeeman CRTEK CRGANIO/ FACILI TSS WET CHEMISTRY METALS PREP 0 BOD/COD SUPERVISOR WORK COUNTER • 4(2) SAMPLE SAMPLE RECE IVING REFRIGERATED BREAK RECEIVING SAMPLE STORAGE ROOM SUPERVISOR

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2.2.2 QC Lot Checks

The quality of preservatives, acids and solvents used by ORTEK are documented in accordance with SOP OP-20 in order to provide assurance that analytical results reported are not biased. preservative/reagent or solvent QC checklist (Figure 1) is to be completed for each lot received. Set aside lots need to be documented only once upon receipt of the first shipment. All subsequent lots should be verified by checking that the lot number matches the original vendor lot that was QC tested. The QC lot number assigned should be used in all subsequent documentation such as extraction logbooks and runlogs.

2.2.3 Analytical Standards

The identity and purity of the neat standard must be documented by the vendor and supplied with the standards. All weights must be traceable to NIST. This documentation must be attached to the Standards Logbook, or kept in a Standards Binder for each section of the laboratory.

Expiration dates must be written on each analytical standard prepared by ORTEK or purchased commercially. Metals working standards are less than 24 hours old at the beginning of the run, so expiration dates are not required. In addition, a preparation or opening date must be recorded on the container. All bench records containing or referencing calibration results must reference the standards used in the file or runlog name by the Standards Logbook number and page where the documentation is recorded. Instrument log books for metals will reference the standard number used.

When analytical standards are discarded, the entry in the Standards Logbook must be crossed out with an X and the analyst discarding the standard inital, date, and note how the standard was disposed of.

Only Class A volumetric glassware cleaned in accordance with SOP OP-8 is to be used to prepare standards. The analytical balance used to weigh standards must be calibrated and leveled before use in accordance with SOP OP-5. Testing of pipettes will be done in accordance with SOP OP-7.

FIGURE 1

PRESERVATIVE/REAGENT OR SOLVENT QC CHECK LIST

PRESERVAT	TIVE	REAGENT OR SOLVENT	
HOW PREPA	ARED:	HOW PREPARED:	
VENDOR: VENDOR LO DATE LOT R	ARED:	DATE PREPARED: VENDOR: VENDOR LOT#: DATE LOT RECEIVED: USES:	
	SSIGNED:	QC LOT # ASSIGNED:	-
LAB SAMPL		TCH #:	
METHOD O	F ANALYSIS:		
RESULTS	SUMMARY OF DETECTS:		
	D BY:	DATE:	
ORIGINAL TO): QC OFFICER		

2-5

ORGANICS

WET CHEM

SAMPLE RECEIVING

METALS

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Data quality can be adversely affected by the storage of lab reagents and standards in inappropriate containers. No organic reagents or standards should be stored in or prepared with any plasticware, to avoid phthalate contamination or analyte sorption. Metal standards must be stored in high density polyethylene (HDPE) containers to reduce the probability of metals plating out on the container. Amber containers must be used for photosensitive reagents.

2.2.4 Material Storage and Disposal

Manufacturer's recommendations regarding storage and disposal must be followed. Standards and reagents are stored separately from samples. Incompatible reagents such as organic acids and flammable liquids are stored separately from oxidizing acids. Organic reagents are stored at or below 4°C. Stock standards in organic solvents are stored in freezers.

Refrigerator and freezer temperatures are monitored by an electronic system integrated with the building security alarms. Daily recording and verification of temperatures is to be done in accordance with SOP OP-6. Thermometers are calibrated annually in accordance with SOP OP-4.

Expired reagents and standards are segregated and contents/concentrations are compared against the City of Green Bay Metropolitan sewage discharge limits or TCLP limits for assessment of disposal options.

Reagents/standards that cannot be disposed of in the sewer system or a municipal landfill are logged into the Hazardous Waste Inventory Log for eventual lab packing and disposal. SOP OP-14 details these laboratory waste disposal practices.

2.3 Sample Management

Clients are encouraged to use sample containers and documentation supplied by ORTEK to aid in collecting a representative sample that is properly preserved and analyzed to meet their data needs. Although this manual defines the lab QA Program, field QA operations also impact sample integrity. Field QA is discussed below to alert ORTEK personnel to concerns and requirements for proper sample packaging, shipment, and collection.

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2.3.1 Sample Containers/Preservatives

ORTEK uses commercially available precleaned sample bottles. No sample bottles are reused. Two different levels of bottle quality are kept in inventory. One level consists of bottles of which a certain percentage are checked for purity in each lot. A certificate of purity is included with the bottles.

The other level of bottle quality available is the same as the precleaned and tested bottles, but without certificates of analysis. ORTEK also purchases presterilized bottles for drinking water coliform analyses. Any uncleaned bottles received will be randomly checked for cleanliness.

Preservatives are prepared by ORTEK and their quality documented on the Preservative/Reagent or Solvent QC Checklist (Figure 1). Preservatives may be added to the sample container or contained separately in sealed ampules, depending on client need.

The client's request for bottles and shipping supplies is documented on a Sample Bottle Request Form (Figure 2). The lot number of trip blanks, bottles, and preservatives is recorded in order to trace back possible sources of contaminated field/trip blanks. SOP OP-3 details the procedure for tracking sample bottles and preservatives sent to clients.

Sample containers, preservatives, and minimum volumes needed by ORTEK are listed in Table 2. EPA holding times are also listed to enable clients to efficiently time sampling and to permit lab managers to schedule analyses.

SAMPLE COLLECTION & SHIPMENT REGULATIONS

Most analytical programs require samples to be received CHILLED -but not trozen

Samples should therefore be PACKED WITH ICE to keep the temperature at NO MORE THAN 4 DEGREES C. Sample containers should be placed in plastic bags to prevent sample labels from soaking off.

("blue ice" can be used, but ice typically provides better cooling.)

OTHER REGULATORY AGENCIES:

Ontels "Temperature Bani' is a valid" water whome with decised to onest comberature on recept. The measured bemperature is recorded on the Charlot Custody.

SAMPLE BOTTLE REQUEST FORM

Will Pick U	. –					Date:
						Send Shipment to:
Time:	□ ^	LM. 🗆 PJ	vi.			
Job No.:			••			
Plastic	Total Number	•	H,SO,	HNO;	Other	
1000 ml						Lead Kit Only
500 ml						Sterile (6 oz.)
250 ml						
Glass (Clear	·)					Cooler(s) Needed 🔲 Yes 🔲 No
1000 ml						Amount:
500 ml						Bottles Labeled 🔲 Yes 🔲 No
Glass (Amb	er)					Special Instructions:
1000 ml						
\$00 ml						
Vials						
∌o mi						Requested by:
40 ml						Order Filled by:

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TABLE 1
ORTEK INSTRUMENTATION

Instrum	ent ID	Date of Purchase	Manufacturer	Model Number	Accessories
GC/MS	HP-1	1990	Hewlett-Packard	5970B	7673 Autosampler RTE-A Data System
GC/MS	HP-2	1991	Hewlett-Packard	5995C	TEKMAR 2000/2016 Purge and Trap Autosampler
GC/MS	HP-3	1991	Hewlett-Packard	5970B	7673 Autosampler RTE-A Data System
GC/MS	HP-4	1991	Hewlett-Packard	5995C	TEKMAR 2000/2016 Purge and Trap Autosampler
GC/MS	50BB	1989	Finnigan Incos	50в '	CTC A2000 S Autosampler Formaster Soft- ware for CLP
GC/MS	50CV	1989	Finnigan Incos	50C	TEKMAR LCS 2000/2016 Purge and Trap Autosampler Formaster Soft- ware for CLP

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TABLE 1 ORTEK INSTRUMENTATION

Instrument ID		Date of Purchase	Manufacturer	Model Number	Accessories
GC	С	1990	Varian	3400	Photoionization Detector, Flame Ionization Detector, TEKMAR 2000 Purge and Trap, TEKMAR 205 Autosampler
GC	I	1990	Varian	3400	Photoionization Detector, Flame Ionization Detector, Varian 8035 Autosampler
GC	Е	1990	Varian	3400	Photoionization Detector, Flame Ionization Detector, HP 19395A Head- space Unit
GC	F	1990	Varian	3400	Flame Ionization Detector, HP 19395A Headspace Unit

TABLE 1

ORTEK INSTRUMENTATION

Instrument ID	Date of Purchase	Manufacturer	Model Number	Accessories	
GC	В	1990	Varian	3400	Hall Electrolytic Conductivity Detector, Photo- Ionization Detector, TEKMAR 2000 Purge and Trap, TEKMAR 2016 Autosampler
GC	D	1991	Hewlett-Packard	5890	Hall Electrolytic Conductivity Detector, Photo- Ionization Detector, TEKMAR 2000/2016 Purge and Trap Auto- sampler
GC	А	1991	Hewlett-Packard	5890	Hall Electrolytic Conductivity Detector, Photo- Ionization Detector, OI 4460A/MPM16
GC	K	1988	Perkin-Elmer	8700	Hall Electrolytic Conductivity Detector, Photo- Ionization Detector, TEKMAR 2016 Purge and Trap

TABLE 1 ORTEK INSTRUMENTATION

Instrume	nt ID	Date of Purchase	Manufacturer	Model Number	Accessories
GC	G	1988	Perkin-Elmer	8420	Flame Ionization Detector, HP 19395A Head- space AS8300 Autosampler
GC	J	1988	Perkin-Elmer	8420	Electron Captur Detector, AS830 Autosampler
GC	Н	1990	Hewlett-Packard	5890В	Oval ECD Detectors, 7673 Autosample
GC	,	1987	Perkin-Elmer	8500	Flame Ionization Detector, Electron Captur Detector, AS830 Autosampler
Gel Permo Chromato		1991	Analytical Bio-Chemistry Labs	1002В	Automatic Shuto Valve, Sample Fraction Collector

TABLE 1

ORTEK INSTRUMENTATION

Instrument ID	Date of Purchase	Manufacturer	Model Number	Accessories
Sonicator	1988	Heat Systems	W-385	
Sonicator	1991	Heat Systems	XL-2020	Electronic Tuning
Sample Evaporator Bath	1991	Zymark Turbovap		6 Unit
HPLC	1988	Waters Associates		712 WISP Auto- sampler, 590 Programmable Pump, 480 UV Detector

TABLE 1
ORTEK INSTRUMENTATION

METALS SECTION			<u> </u>	
Instrument ID	Date of Purchase	Manufacturer	Model Number	Accessories
Inductively Coupled Argon Plasma Spec- trometer (ICAP) 61E	1991	Thermo Jarrell Ash	61E	Simultaneous ICP Autosampler
ICAP P2	1988	Perkin-Elmer	Plasma	Perkim-Elmer AS80 Autosampler
Atomic Absorption Spectrometer (AA) 5100Z	1991	Perkin-Elmer	5100	Zeeman Background Correction, Graphite Furnace Perkin-Elmer AS60 Autosampler
AA Spectrometer 510022	1991	Perkin-Elmer	5100	Zeeman Background Correction, Graphite Furnace Perkin-Elmer AS60 Autosampler
AA Spectrometer 3030B	1985	Perkin-Elmer	3030B	Graphite Furnace Cold Vapor Analysis, Perkin- Elmer AS60 Auto- sampler
AA Spectrometer 1100B	1987	Perkin-Elmer	1100В	Flame

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TABLE 1 ORTEK INSTRUMENTATION

Instrument ID	Date of Purchase	Manufacturer	Model Number	Accessories
Autoanalyzer	1988	Lachat Quick Chem	11	Lachat Model 1100 Autosampler, Model 80 Circulating Water Bath
Fourier Trans- formation Infra- red Spectrometer (FTIR)	1989	Perkin-Elmer	1600	
Sonicator	1989	TEKMAR	TM600-2	

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TABLE 2 ORTEK SAMPLE CONTAINERS/PRESERVATIVES & HOLDING TIMES ORGANICS

PARAMETER	MATRIX Analytical Procedure	HOLDING TIME from sample collection date	CONTAINER	PRESERVATIVE	SA	imum Mple Lume
VOLATILE HALOCARBONS L AROMATICS	WATER	14 days	3-40 ml VOA Vials	4°C, no headspace, HCl to pH<2	, 40	ml
(GC-Methods)	SOIL/WASTE -Direct Purge -Methanol Extraction	14 days 14 days to extract 7 days to analysi		4°C	10	gm
VOLATILES GC/MS methods	WATER	14 days	3-40 ml VOA vials	4°C, no headspace, HCl to pH<2		ml
	SOIL/WASTE -Direct Purge -Methanol Extraction	14 days 14 days to extract 7 days to analysis	1-120 ml glass jars/teflon lids, no headspace	4°C	10	gm
ORGANOCHLORIDE PESTICIDES/ PCBs	WATER	7 days to extract 40 days to analysis	2-liter amber glass jar/teflon lid	4°C 1	1000	m1
HERBICIDES -	SOIL/WASTE	14 days to extract 40 days to analysis	1-8 oz amber glass jar with teflon lid	4°C	120	gm
SEMIVOLATILES (GC or GC/MS method)	WATER	7 days to extract 40 days to analysis	l-liter amber glass jars/teflon lid	4°C 1	000	ml
	SOIL/WASTE	14 days to extract 40 days to analysis	1-8 oz glass jar with teflon lid	4° C	50	gm

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TABLE 2 ORGANICS (Continued)

PARAMETER	MATRIX	HOLDING TIME from sample collection date	CONTAINER	PRESERVATIVE	Minimum Sample Volume
TOTAL PETROLEUM	WATER	14 days 1-liter	amber glass jar	4°C, no headspace	40 ml
HYDROCARBONS (GC - Modified California method)	SOIL/WASTE -Direct Purge -Methanol Extraction	14 days 14 days to extract 14 days to analysis	1-120 ml glass jars/teflon lids	4°C	120 gm
TOTAL RECOVERABLE PETROLEUM HYDROCARBONS-IR	WATER	28 days recommended	1-liter glass jar with teflon lid	H _. S04 to pH<2, 4 ⁸ C	1000 ml
	SOIL/WASTE	28 days recommended	1-8 oz glass jar with teflon lid	4°C	20 gm
TCLP ORGANICS	SOIL/WASTE	14 days to extract 7 days to solvent extraction 40 days to analysis	glass wide mouth jar with teflon lid	4°C recommended	100 g

OTES:

riple volume is required for organic matrix spikes and matrix spike duplicate samples for water amples.

TABLE 2 **METALS**

PARAMETER	MATRIX	HOLDING TIME from sample collection date	CONTAINER	PRESERVATIVE	MINI SAM VOL	PLE
METALS: TCLP, ICP and/or GFAA	WATER	6 months	1-liter HDPE bottle	HNO ₃ to pH<2	500	ml
TOP and/OF GPAA	SOIL/WASTE	6 months 14 days to extract TCLP 6 months after extraction	8 oz glass jar	4°C	20	gm
1ERCURY*	WATER	28 days	1-liter HDPE bottle	HNO ₃ to pH<2	1000	ml
	SOIL/WASTE	28 days	8 oz glass jar	4°C	20	gm
'HROMIUM VI	WATER	24 hours	1-liter HDPE bottle	4°C	500	ml
	SOIL/WASTE	Not established, 24 hr recommended once soil is extra	8 oz glass jar cted	,4°C	20	gm

PTES: HDPE = High Density polyethylene
*Can be from same container as METALS

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TABLE 2 WET CHEMISTRY

PARAMETER	MATRIX	HOLDING TIME from sample collection date	CONTAINER	PRESERVATIVE	MINIMUM SAMPLE VOLUME
ACIDITY	WATER	14 days	1-liter HDPE	4°C	100 ml
ALKALINITY	WATER	14 days	1-500 ml HDPE	4 °C	100 ml
B.O.D.	WATER	48 hours	1-500 ml HDPE	4°C	500 ml
C.O.D.	WATER	28 days	1-500 ml HDPE	H ₂ SO ₄ to pH<2	100 ml
CHLORIDE	WATER	28 days	1-500 ml HDPE	4°C	100 ml
CHLORINE, RESIDUAL	WATER	24 hours	1-500 ml HDPE	4°C	100 ml
COLIFORM, GAFE/UNSAFE	WATER	24 hours 30 hours max.	1-200 ml sterilized HDPE	Na ₂ SO ₃ , Sterile	100 ml
COLIFORM, FECAL/TOTAL	WATER	24 hours 30 hours max.	1-200 ml sterilized HDPE	Na,SO,, Sterile	100 ml
YANIDES	WATER	14 days	1-liter HDPE	NaOH to pH>12, 4°C	1000 ml
	SOIL	14 days	1-8 oz glass jar	4°C	50 g
LASH POINT	WATER SOIL	28 days 28 days	1-500 ml HDPE 1-8 oz glass jar	4°C 4°C	100 ml 100 g
LUORIDE	WATER SOIL	28 days 28 days	1-500 ml HDPE 1-500 ml HDPE	None	100 ml 50 g
REE LIQUIDS	SOIL/WASTE	28 days	1-liter HDPE	4°C	500 ml
IARDNESS	WATER	6 months	1-500 ml HDPE	HNO, to pH<2	100 ml

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TABLE 2 WET CHEMISTRY (Continued)

PARAMETER	MATRIX	HOLDING TIME from sample collection date	CONTAINER	PRESERVATIVE	MINIMUM SAMPLE VOLUME
NITROGEN, AMMONIA	WATER SOIL/SLUDGE	28 days 28 days	1-500 ml HDPE 1-500 ml HDPE	H,SO, to pH<2, 4°C	100 ml 100 g
NITROGEN, KJELDAHL	WATER	28 days	1-liter HDPE	H ₂ SO ₄ to pH<2,	500 ml
	SOIL/SLUDGE	28 days	1-8 oz glass jar	4 ° C	10 g
HITROGEN, NITRATE	WATER	48 hours	1-500 ml HDPE	4°C	100 ml
	SOIL	48 hours after soil extraction	1-8 oz glass jar	4°C	20 g
NITROGEN, NITRATE + NITRITE	WATER	28 days	1-liter HDPE	H ₂ SO ₄ to pH<2,	100 ml
	SOIL	28 days after soil extraction	1-8 oz glass jar	4°C,H,SO, to pH<2	20 g
HITROGEN, NITRITE	WATER	48 hours	1-liter HDPE	4°C	100 ml
	SOIL	48 hours after soil extraction	1-8 oz glass jar	4°C,H,SO, to pH<2	20 g
)II. AND GREASE	WATER	28 days	l-liter clear glass jar	H ₃ SO ₄ to pH<2,	1000 ml
	SOIL	28 days	1-8 oz glass jar	4 °C	50 g
PRGANIC CARBON TOTAL	WATER	28 days	1-250 ml amber glass	H ₂ SO ₄ to pH<2,	100 ml
	SOIL	20 days recommended	1-120 ml glass jar	4°C	10 g

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TABLE 2 WET CHEMISTRY (Continued)

fro		HOLDING TIME from sample collection date	CONTAINER	PRESERVATIVE	MININUM SAMPLE VOLUME
OXYGEN, DISSOLVED	WATER	ANALYZE IMMEDIATELY	1-liter clear glass jar	None	300 ml
р́Ш	WATER	24 hours	1-500 ml HDPE	None	100 ml
PHENOLS	WATER	28 days	1-liter clear glass jar	H,SO to pH<2,	1000 ml
	SOIL/SLUDGE	28 days	1-8 oz glass jar	4 ° C	50 g
PHOSPHATE, ORTHO	WATER	48 hours	1-500 ml HDPE	Filter, 4°C	100 ml
PHOSPHORUS, TOTAL	WATER	28 days	1-500 ml HDPE	H ₂ SO ₄ to pH<2,	100 ml
	SOIL/SLUDGE	28 days after soil extraction	1-8 oz glass jar	4°C	50 g
SOLIDS, DISSOLVED	WATER	48 hours	1-500 ml HDPE	4°C	200 ml
SOLIDS, TOTAL/ VOLATILE/SUSPENDED	WATER	7 days	1-500 ml HDPE	4°C	200 ml
	SOIL/SLUDGE	7 days	1-8 oz glass jar	none	20 g
SPECIFIC CONDUCTANCE	WATER	28 days	1-500 ml HDPE	4°C	200 ml

TABLE 2 WET CHEMISTRY (Continued)

PARAMETER .	MATRIX	HOLDING TIME from sample collection date	CONTAINER	PRESERVATIVE	MINIMUN SAMPLE VOLUME		
SULFATE	WATER	28 days	1-500 ml HDPE	4°C	200 ml		
SULFIDE WATER		7 days	1-500 ml HDPE	ZnAC/NaOH to pH>9, 4°C	200 ml		
	SOIL/SLUDGE	7 days	1-8 oz glass jar	4 ° C	50 g		
SULFITE	WATER	ANALYZE IMMEDIATELY	1-500 ml HDPE	4°C	200 ml		

OTES: HDPE = High Density Polyethylene ZnAC = Zinc Acetate

everal wet chemistry analyses may be performed out of the same container if the preservative is dentical. Container volume of 1 liter is recommended for allowances for reanalyses and internal QC.

•

FIGURE 3

BATCH:	ORTE	K SECTION: [] RECEIVING
	OUT OF CONTRO	CL FORM [] EXTRACTION
MATRIX:		[] DIGESTION
CLIENT:		•
DATE REPORTED://		[] METALS
REPORTED BY:	_	[] WET CHEM [] ORGANICS
PROBLEM:		- Tonomics
[] Hold Time missed	d	[] Hold blank contaminated
[] Improper pH of	sample	[] Lab blank contaminated
[] Improper sample	temperature	[] Calibration out
[] Insufficient sam	mple volume	[] Check standards out
[] Improper Contain	ner	[] Surrogates out
[] Custody violate	d	[] BS/BSD recovery out
[] Program change		[] BS/BSD RPD out
()		[] MS/MSD recovery out
. []		[] MS/MSD RPD out
		[]
ACTION TAKEN:		
Person Notified:		Date of Notification:/_/_
Company:		
		for
	-	for
		- Damusahada
		ne Requested:
Holding Time Expires on:	· _/_/_	
PROBLEM RESOLVED:	[] Yes [] No	lo
Resolved by:	and the state of t	
cc: QA Officer	Clie	ient File (Original)

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2.3.2 Field Collection

Prior to collecting and shipping samples, clients are urged to contact ORTEK to ensure adequate time for delivery of sample bottles, trip blanks and preservatives. The capacity of the lab to handle any quick turn analyses should also be verified. The potential hazard level of the samples and specific analytical requirements and any special QC or reporting needs should also be discussed and documented. Field instrument readings such as HNU, PID or field observations should be indicated on the paperwork accompanying the samples to aid lab personnel in avoiding saturation of instrument detectors. Arrangements for Saturday delivery to the lab, or after hours courier drop off, should be made prior to sample shipment.

Those samples requiring preservation at 4°C should be iced prior to packaging and shipment in order for the temperature to be within 4 ± 2°C upon receipt. "Blue ice" packs are usually not sufficient to keep the temperature at 4 ± 2°C so cube ice or block ice is recommended. Figure 2 presents the form ORTEK sends with sample bottles to alert clients to these requirements. Courier services, commercial shippers and delivery in person by the client, all necessitate that the sample be iced as soon as the sample has been taken to ensure that all reasonable effort was made to properly chill the sample.

Field personnel should initiate either an ORTEK or client specific Chain-of-Custody Form, and indicate the analyses required. Sample containers should be labeled to indicate the sample location, date, time, sampler and preservatives used. Any trip blanks necessary should be listed on the Chain-of-Custody Form. Containers as listed in Table 2 are recommended to ensure that the sample is compatible with the intended analysis. ORTEK Sample Receiving personnel will examine the condition, preservation, container and documentation. discrepancies will be noted on an Out-of-Control Form (Figure 3). The client will be notified before the sample is accepted for analysis and logged into the laboratory sample tracking system. Details of the ORTEK log-in and sample receipt process is contained in SOP OP-2.

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2.3.3 <u>Laboratory Storage</u>

Samples are stored in restricted access refrigerators or on shelves which are numbered in accordance with SOP OP-12. This sample storage location number is entered on the Chainof-Custody and the sample label. Soil samples are stored separately from water samples and suspected medium or high level organic samples are segregated from the other organic samples. Holding blanks are prepared for volatile organic analysis and stored with the samples in accordance with SOP OP-18.

The refrigerated storage temperature is monitored is by a digital system linked to the building security alarms. The system monitors the temperature every 15 seconds and an audible alarm is sounded if the temperature exceeds the upper range of 10°C for more than an hour. After hours, the temperature alarm sounds at the security agency and laboratory management personnel are called. The upper range was set at 10°C to compensate for door openings to retrieve and replace samples. The temperature probes were initially factory calibrated against a reference and are checked biweekly against an independent thermo- meter. Temperatures are recorded according to SOP OP-6 and thermometer calibration is done annually against an NIST reference thermometer in accordance with SOP OP-4.

After analysis, samples are moved to a refrigerated holding area. Metals samples are stored at room temperature after digestion and are grouped by the blank number analyzed with them. All samples are routinely held 30 days after reports are released, unless other arrangements for longer storage have been made. Any samples with analytical results indicating that they are hazardous waste are flagged in accordance with SOP OP-14.

2.3.4 Sample and Waste Disposal

Aqueous samples and metal digests that are not classified as hazardous based on ORTEK's analyses and are within the Green Bay Metropolitan Sewage District discharge limits are emptied into the sink and flushed with tap water. To reduce plugging, aqueous samples with significant amounts of solids are not emptied down the drain. High solids aqueous samples and soil samples above the TCLP limit as total analyses are emptied into a waste barrel. A

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sample for TCLP analysis is collected from the barrel. If the TCLP analysis indicates that the waste is not hazardous, the TCLP results are sent to and reviewed by the landfill. A local waste hauler transports the waste to the landfill. If the TCLP analysis indicates that the waste is hazardous, the barrel is overpacked and a hazardous waste hauler disposes of the waste. Laboratory generated solvent wastes are segregated into chlorinated solvent barrels and nonchlorinated solvent barrels. All known PCB sample and solvent waste is also separated and disposed of by a hazardous waste hauler. Details of the laboratory waste disposal protocol is contained in SOP OP-14.

2.4 Security

ORTEK maintains a controlled access facility to ensure client confidentiality, proper sample custody and document control in accordance with SOP OP-13.

Visitors are required to sign in with the receptionist and are issued visitor badges. All visitors are accompanied by an ORTEK employee while in the laboratory and data operations areas.

Managers and analysts are assigned unique code numbers to activate and deactivate the security alarm system and a printout of alarm activity is provided to the Laboratory Director by the security firm. Security breaches occurring during non-working hours release an alarm to the security agency who alerts the local police and the laboratory director.

Computer access to client records, financial data and analytical data is restricted in accordance with SOP OP-15. Backup of the computer system and storage of the files is also detailed in this SOP.

Dependent on the QC review and data approval responsibilities and authority, each analyst or employee is restricted to the areas of the Laboratory Information Management System they can access or revise. No data or client files are removed from the facility and all working data files are controlled by a check out card system. QA reports to clients that include other client samples are censored so that sample results are not traceable to the source.

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3.0 LABORATORY ORGANIZATION AND RESPONSIBILITY

The Laboratory Director has overall responsibility for the technical quality, cost control, laboratory personnel management, and adherence to project schedules. The Laboratory Quality Assurance Officer is responsible for monitoring the quality of laboratory work and taking appropriate actions to ensure that quality standards are being met. The QA Officer reports directly to the President and is independent of laboratory cost or profit responsibilities, schedules and personnel supervision other than QA Assistants. Responsibilities for fulfilling day to day quality control requirements is delegated to each Laboratory Section, and the performance monitored by the QA Officer. The Section Managers (Organics, Metals, Wet Chemistry, Client Services) are responsible for technical quality of work within their respective sections, including adherence to prescribed procedures for calibration, preventive maintenance, data validation, training, out-ofcontrol forms and corrective actions. The Section Managers are responsible for meeting project commitment dates, (including preparation and analysis of samples within holding times), and reporting data and QA information as required by the client. Each Analyst is responsible for implementing and documenting this Laboratory QA Program in daily activities which includes the preparation of out-ofcontrol forms, and taking corrective actions in accordance with SOP OP-16 if quality criteria are not met.

The specific responsibilities and authority of ORTEK personnel for QA/QC activities are described below. Resumes of personnel are available upon request. An organizational chart indicating reporting and communication lines is contained in Figure 4.

3.1 President

The President is responsible for long range planning and establishing the operating policies of the laboratory. He provides the resources and commitment to the Laboratory QA Officer to implement this QA Program Manual. He provides for strategic planning and communicates with the Board of Directors on profit, scheduling and resource issues. Quality related laboratory performance issues are relayed to him in monthly QA reports prepared by the QA Officer.

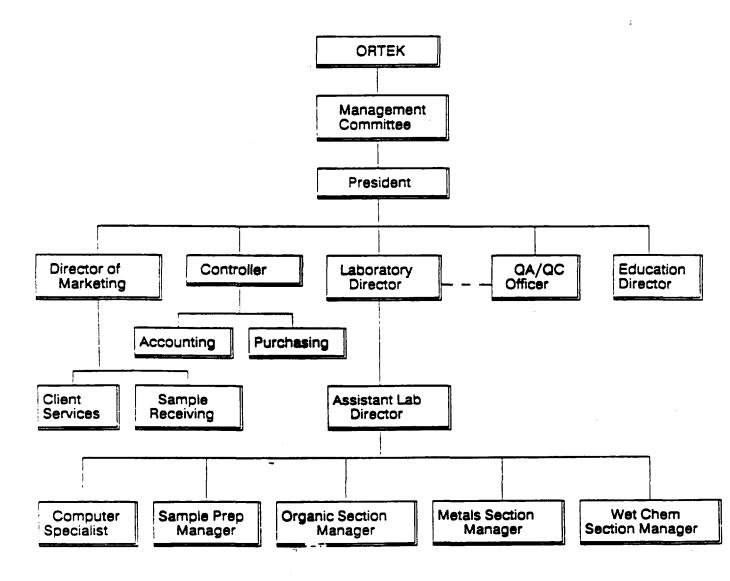
3.2 Laboratory Director

The Laboratory Director is responsible for hiring, assignment of personnel, and the purchase of new equipment. He reports to the President and is responsible for the management of laboratory resources to accomplish designated goals and turnaround times.

FIGURE 4

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ORTEK MANAGEMENT STRUCTURE



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He assesses productivity of each section of the laboratory and determines with the Section Manager how to optimize efficiency without compromising quality.

Additional Laboratory Director's duties and responsibilities include the following:

- Direct the laboratory's analytical programs and physical operations including mobile laboratory activities.
- Coordinate and prioritize projects and associated workloads.
- Execute laboratory administrative functions.
- Ensure that analytical methods comply with client needs and regulatory requirements.

3.3 Assistant Laboratory Director

The Assistant Laboratory Director provides for day-to-day technical direction to laboratory personnel. He evaluates analytical techniques, SOPs, operation of instrumentation and provides recommendations for improvement to the Laboratory Director. In addition, the Assistant Laboratory Director:

- Oversees the log-in of samples received and tracks status.
- Supervises the verification of software for data processing.
- Manages laboratory daily analytical operations.
- Supervises and reviews Quality Control activities performed as part of routine analytical operations.
- Supervises maintenance and service of laboratory equipment.

3.4 Director of Marketing

The Marketing Director is responsible for coordinating the project management, client services and marketing efforts of the Laboratory. This involves coordinating with the Laboratory Director in ensuring that the analytical needs of the client are met and with the QA Officer in ensuring that the client's Data Quality Objectives (DQO's) are defined and met. The Marketing Director reports to the President.

For assigned projects, his staff coordinates field supplies, tracks sampling and sample analysis status, maintains contact with the client project manager, and

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reviews data for completeness. He keeps the Lab Director apprised of project schedule, analysis and OA status.

The Director of Marketing is also responsible for obtaining feedback from clients on quality and timeliness of service. He supervises preparation of price quotes, responses to RFQ's, proposals, SOOs, and other sales oriented literature.

3.5 Laboratory QA Officer

The Laboratory QA Officer has the authority to stop production of data in the laboratory, when review of the QC data or analytical procedures indicates that data quality is compromised or is not sufficient to meet client requirements. She reports directly to the President and communicates QC deficiencies and corrective actions to the Lab Director and affected Section Managers. Other primary duties and responsibilities of the position are:

- Update QA Program Manual at least annually and maintain distribution list.
- Responsible for writing, maintaining and distributing laboratory SOPs.
- · Conduct laboratory and data audits to assess effectiveness of QA Program with a monthly report in writing to Lab Director and President.
- Responsible for completion of Monthly Progress Reports (NEESA, HAZWRAP projects) and other client QA reports when requested in accordance with SOP OP-17.
- Maintain laboratory certification/approval records, review performance evaluation sample data, and provide responses to certifying agencies as required.
- Respond to client data challenges and provide feedback to management on outcome of challenges.
- Provide technical assistance to Section Managers by defining new method validation requirements and instrument detection limit verification. Calculate method accuracy, precision and control chart limits.

3.6 Section Managers

The laboratory is divided into three technical sections, each headed by a Section Manager. Each Section Manager has hands-on experience in all of the tests in the section and serves as the lead analyst and Date November 1991

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technical resource to the staff. Each reports to the Laboratory Director. Each Section Manager's duties and responsibilities are:

- Organize, schedule and prioritize the section analyses with consideration for sample-holding times and client due dates.
- Check that required number and type of QC checks are performed.
- Assign analysts for data processing and data validation activities.
- Review and approve section analytical data in accordance with SOP OP-17 and submit to Client Services.
- Evaluate instrument performance and supervise instrument calibration and preventive maintenance programs.
- Report out-of-control situations to the Laboratory QA Officer.
- Implement and verify the effectiveness of corrective actions in accordance with SOP OP-16.

3.7 Analysts

Laboratory analysts are responsible for determining and documenting the quality of the data they generate. They are responsible for equipment maintenance, calibration and documentation in accordance with ORTEK SOPs. They are to include the appropriate number and type of QC samples as defined by this QA manual, analytical method, and client request. They are to identify out-of-control situations and document them to the Section Manager and QA Officer for resolution. They are to conduct corrective actions promptly and document their effectiveness.

3.8 Support Staff

Delivery of a quality product to clients is not limited to lab analysis. Ancillary to analytical operations are the functions of sample receipt, client services, accounting, and education.

Sample receiving personnel ensure that submitted samples are properly documented, preserved and entered into the Laboratory Management Information System. Sample receiving personnel clarify vague or questionable analysis requests with the client. Conversations with the client are documented and problems resolved <u>before</u> samples are logged in for

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analysis. Proper sample labeling, computer log-in and analyses are then verified by Client Services and the client contacted to clarify discrepancies. Client Services prepares and assembles client data packages in accordance with SOP OP-10 to include the invoice, chain-of-custody forms and analytical result sheets. Quality concerns are typographical errors, mathematical calculations and accurate sample/client identifiers. Proper storage of client records and data are the responsibility of Client Services in accordance with SOP OP-11. Accounting personnel verify correct invoice totals and per sample charges against price quotes and/or the Analytical Services Manual list prices.

3.9 Training

The Education and Training Director is an integral part of the QA Program since well trained personnel are the foundation of quality data generation.

ORTEK has received a grant from the U.S. Department of Education under the Carl D. Perkins Vocational Educational Act of 1984 to provide basic and advanced environmental analytical training to Native American ORTEK employees. Course curriculum includes principles of instrumental analysis, QA/QC operations, and good laboratory practices. A classroom and teaching lab is located in the Western Avenue lab building. ORTEK laboratory technicians are encouraged to participate in the course. Details of employee training are included in SOP OP-09.

New employees are required to read this laboratory QA Manual and sign that they have accepted its requirements. On a method-by-method basis each analyst first reads and signs the applicable SOP, performs the method, and analyzes independently prepared QC samples at least twice with acceptable results before they can be considered - "certified" to produce sample data. Documentation of Certification is recorded on Figure 5 and kept by the QC Officer.

On an ongoing basis, results of client/government agency performance evaluation samples and blind internal performance evaluation samples are recorded for each analyst to provide feedback on their performance. The QC Officer maintains these records. Figure 6 is used to record these sample results.

FIGURE 5 ORTEK Training Form

		· -		
Trainee	<u></u>			
Method:				
Trainer				
Date of	Certific	ation://_		
without	s to cer supervis steps in	ion. The trainee	rainee can perfor has successfull	rm the above method ly completed the fol-
	1. Has	been shown all	steps of the tes	
	2. Has	performed the t	est under super	vision
	3. Can	independently c	complete all nece	essary
	4. Has sam	successfully ar ples on two sepa	nalyzed EPA perfo arate occasions	ormance
-	<u>Date</u>	Reference True Value	Acceptance <u>Limit</u>	Analyst Result
_				
_		-		
Signatu	res:			
	Ţ	rainee:		·····
	Ţ	rainer:		
	QC O	fficer:		

FIGURE 6

ORTEK BLIND PERFORMANCE SAMPLE EVALUATION

ANALYTE:		 		ANALYST:	
METHOD:					
MATRIX:					
BLIND SAME	PLE #:		_	SOURCE:	
DATE ANALY	ZED:		-		
ANALYST <u>VALUE</u>	<u>UNITS</u>	TRUE VALUE	<u>units</u>	ACCEPTANCE LIMITS	Limit <u>Basis</u>
			<u></u> .		
Comments/0	Corrective	Action:			

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New employees also review laboratory safety rules before any lab work can start. Annually, videotapes from a commercial vendor are viewed. Attendance is mandatory and certificates of training are issued. A Safety Committee consisting of at least one analyst from each section of the lab meets regularly to discuss employee concerns in their areas and make written recommendations to management. The Chemical Hygiene Plan and Spill Response Plan is supplied to all analysts and it is stressed that safety is everyone's responsibility.

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4.0 OA OBJECTIVES

The primary QA objective of the laboratory is to develop, implement and document the specific QC criteria that provide for legal, defensible data. Regardless of the client or end use of the data, all analytical results are to be traceable to properly stored and secured samples analyzed by the appropriate method on a correctly calibrated instruments. All data are of known precision and accuracy as determined by the results of the internal QC checks.

The requirements for acceptable internal QC check results and frequency are often established by the client by use of Data Quality Objectives (DQOs).

DQOs are qualitative and quantitative statements that specify the quality of the data necessary to support the client's or regulatory agencys use of the data. DQOs are based on the end use of the data to be collected, the type of decision to be made, the allowable uncertainty in the decision and the risk associated with a "wrong" decision. Clients are encouraged to define their data needs and uses, applicable regulatory limits of concern, critical samples and specifc methodology requirements, as soon as possible, for their project in order to ensure use of the proper DQO.

DQO's have been segregated into levels by the US EPA, Navy and DOE in order to support the different types of decisions that may be based on the analytical data. Five levels of data quality were originally defined by the US EPA under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), more commonly referred to as Superfund. DOE/HAZWRAP adopted the same levels but labeled them as Levels A-E. The Navy selected three of the DOE/EPA levels C-E. Table 3 presents all of these DQO levels and a brief description of their intended data uses. Table 4 lists the laboratory QC requirements ORTEK follows for each level.

TABLE 3

DQO LEVELS AND DATA USES

EPA LEVEL	DOE HAZWRAP LEVEL	NAVY LEVEL	DATA USES(S)	TYPE OF ANALYSIS	LIMITATIONS			
I	A	-	Screening, process monitoring, field health and safety monitoring	Real time in-field measurements	Nonspecific, high detection limits, background levels interfere			
ΙΙ	В	_	Initial site characterization, process monitoring	On-site lab, same day turnaround	Concentration usually reported as range, compound identity uncertain			
111	С	С	Risk assessment, site characterization on nonSuperfund sites. Hazardous waste/RCRA analyses, remediation monitoring	EPA approved methods in off-site or on-site lab	Tentative organic compound identity unless MS or 2nd column GC analyses used			
IV	D	D .	Superfund sites PRP determination risk assessment site characterization remediation monitoring	Quantitative, legally defensible data package using CLP methods (ICAP, GFAA, GC/EC, GC/MS)	TAL & TCL list compounds only available. Independent data validation of packages requires time and dollars			
V	E	Е	Risk assessment PRP determination	Unusual matrices or analyses requiring method development (i.e., tissues, explosives)	Costly, limited number of labs available, interested and qualified, long lead time for method validation required			

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TABLE 4

ORTEK LABORATORY REQUIREMENTS FOR DQOB

EPA LEVEL	DOE HAZWRAP LEVEL	CALIBRATION	LAB BLANK	BLANK SPIKE	LAB DUPLICATE	MATRIX SPIKE	MATRIX SPIKE DUPLICATE	DATA PACKAGE
111	С	5 point initial cali- bration and check every 12 hours	l per batch	1/20 as an LCS metal	1/20 (metals and wet chemistry only)	1/20	1/20 (organics only)	Batch size variable. CLP Forms only.
		GC 2nd column confirmation						Blank spike control charts
IV	D	CLP requirements	CLP 1/20, surrogate recovery	1/20 for PCB metal LCS	NR (organics) 1/20 metals	CLP 1/20	CLP 1/20 (organics only)	Batch size 20. Full CLP package. Blank spike control charts
V	E	3 point initial cali-bration and check every 12 hours	l per batch	l per batch	NR	NR	NR	Batch size variable. Sample result sheets, blank results, Blank spike control charts

<u>Legend</u>: CLP = Contract Laboratory Program

NR = Not Required

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The purpose of complying with these specified DQO levels is to define the precision, accuracy, representativeness, comparability and completeness achieved for the sample analysis. In general, data generated by ORTEK should:

- Be accurate in comparision to true or reference values within an accepted tolerance limit.
- Be precise to within a specified degree of variability between replicate measurements.
- Be representative of the source sampled.
- Be comparable to analytical results obtained by other laboratories following the same QA level and method.
- Be complete in terms of the amount of valid data obtained versus all analyses requested.

These general QA objectives are fulfilled by the ORTEK QA program that defines the specific QC samples to be analyzed and their acceptable limits. The limits are based on historical data collected and method validation studies conducted in-house. When not enough data have been collected by ORTEK to set acceptance limits, advisory limits are set using EPA data. These limits and the frequency of QC sample analyses are specified in Section 10.0 and SOP OP-21.

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5.0 <u>SAMPLING PROCEDURES</u>

As ORTEK does not provide for sample collection, this section is not applicable. Clients are advised to use the certified, clean sample containers supplied by ORTEK to collect their samples and contact ORTEK prior to collection to verify laboratory capacity and minimum sample volume requirements.

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6.0 SAMPLE CUSTODY AND DOCUMENT CONTROL

A sample is legal evidence collected by the client representative of the site. In order for ORTEK to produce legally defensible data representative of a sample, the custody and documentation of the sample must be traceable and secure. This section discusses the lab operations necessary to ensure sample and document integrity. Figure 7 presents the flow of sample and analysis documentation in the laboratory. The sections below describe the specific documents generated and controlled.

6.1 Chain-of-Custody Documentation

The trail of the sample's journey, from collection to disposal, is documented by an unbroken written record that accounts for the secure location of the sample at all times. This unbroken written record is termed the chain-of-custody. A sample is considered in custody if it is:

- · In a person's hands-on possession.
- · In a person's view.
- · Locked or sealed so tampering can not be done.
- · In a secured area, restricted to authorized personnel only.

At ORTEK, the entire laboratory is considered a secured area restricted to analysts only, and the chain-of-custody is considered unbroken until the sample is disposed of by the sample custodian. Intralab transfer of custody occurs only, when samples or sample extracts are transported between the West Mason Street and Western Avenue facilities and is documented in Figure 8.

The chain-of-custody is documented in Figure 9. These forms are sequentially numbered. The chain number is entered in the sample log-in Form (Figure 10) to enable cross referencing of ORTEK sample numbers, client ORTEK batch numbers, sample storage location and custody form. Any client specific QA report or DQO level needed should also be entered in the Special Instructions Comments section to alert analysts and the QA Officer.

6.1.1 Sample Receiving Procedures

The specific steps of sample reception are detailed in SOP OP-2. Briefly, this procedure consists of the following steps:

FIGURE 7

SAMPLE DOCUMENTATION FLOW

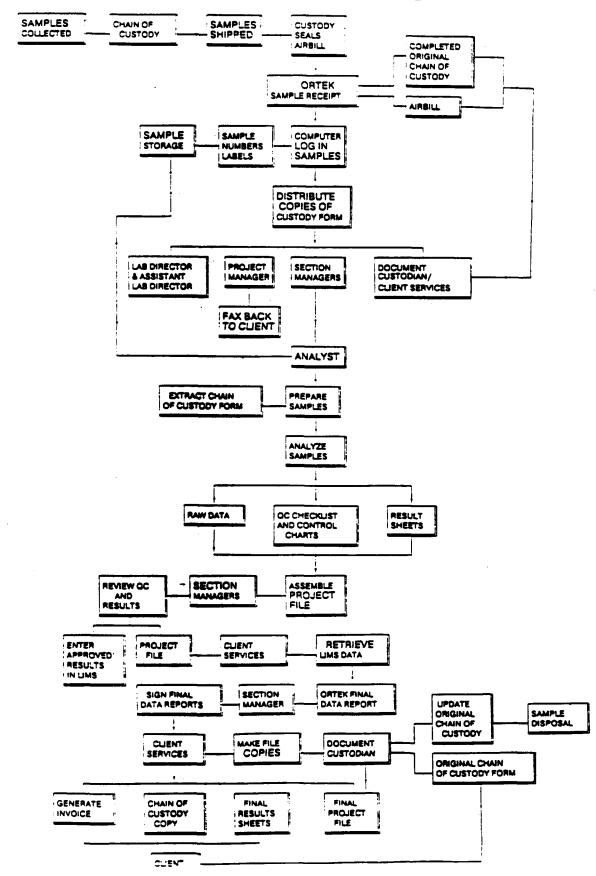


FIGURE 8

Compa	ny Nain No./Cli	E/(OF C	cus J	TOD	Y FO	RM ervativ	"				7		7	7	7		No	: 120
Date	Time	rne Sample I.D./Description		No. of Bottles				A	ANALYSIS REQUESTED								Remerks		tabilitie Grily ID Number		
INCLUDE EXTRACTION LOG AND ALL OT EXTRACT CHAIN OF CUSTODY. CUSTODY TRANSFERS - INTERNAL TO OR															IRUSH						
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Date	Time	Sample I.D./Description		on	No. of Be		Bot	ottles law to		i Sample Igen) ' I 🔺	/_	ANALYSIS REQ			QUESTED		Remei	Remerks	Lab Use Only SD Harmber		
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FIGURE 10

SAMPLE LOG IN FORM

Sample Numbers	Client	Date Received	Sample Status	Location	Batch #
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	·				
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- 1. The condition of the shipping containers and sample bottles will be inspected and documented upon receipt and the temperature measured and recorded (if appropriate). If samples were shipped as hazardous materials this procedure is done in the hood and the sample custodian must wear gloves and a respirator in case of sample leakage.
- The condition of the custody seals (intact/not intact) (Figure 9) will be inspected upon receipt and the client notified of any damage.
- 3. The presence or absence of the following documents accompanying the sample shipment will be verified and an Out-of-Control Form completed to document discrepancies:
 - · Airbills or airbill stickers.
 - · Custody seals.
 - · Custody form.
 - · Sample tags/labels.
- 4. The sample custodian shall sign and date all forms (e.g., custody records, packing lists, and airbills) accompanying the samples at the time of sample receipt.
- 5. The sample custodian shall contact the client to resolve discrepancies and problems such as absent documents, conflicting information, unclear analytical requests, broken custody seals, and unsatisfactory sample condition (e.g., improper preservation, leaking sample bottle) as listed on the Out-of-Control Form.
- 6. The sample custodian shall record the resolution of discrepancies and problems on the Out-of-Control Form and forward the form with the original Chain-of-Custody Form to Client Services. Client Services will fax the completed custody form back to the client for verification.

6.1.2 Sample Log-In Procedures

The specific steps of sample log-in into the Laboratory Information Management System (LIMS) are detailed in SOP OP-2. Briefly, this procedure consists of the following steps:

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1. The sequential ORTEK laboratory sample number and client sample number are entered into LIMS by the sample custodian. The requested turnaround time, due date, holding time, client name, address, date collected and matrix are also entered for each sequential ORTEK laboratory sample number. The appropriate refrigerator storage location code is also entered.

- 2. The sample labels containing the information are then printed by LIMS and placed on each sample bottle.
- 3. Samples are placed in the refrigerator location printed on the label. The sample custodian alerts the appropriate Section Manager of samples with short holding times or quick turn requests. Analysts must return all containers to the refrigerator location.
- 4. The chain-of-custody and <u>all</u> supporting documentation received with the samples, or generated by the sample custodian (i.e., Out-of-Control Forms) are copied for distribution to the Laboratory Director, Assistant Laboratory Director, Section Managers, Project Manager and Client Services. All original documentation is sent to Client Services for inclusion in the client project file.

6.1.3 Analytical Documentation

Any entry into laboratory notebooks or forms must include the date, and the signature or initials of the person making the entry. Initials used by each analyst and their signature are recorded on the acceptance page of this QA Manual and the original is kept by the QC Officer. Sample extraction, preparation logs, and standards preparation logs must be reviewed at least weekly by the Section Managers. Section Managers will countersign and date the pages reviewed. This signature indicates that they have checked the information for compliance with the applicable SOPs.

All laboratory documentation must be made in ink, preferably permanent ink. The use of pencil is not allowed. All corrections to documentation must be made by crossing out the error with a single line and placing the correction above it. The error line must be initialled and dated by the person making the

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correction. No error correction fluid or "white out" is permissible.

Bound logbooks with sequentially numbered pages are preferable for recording laboratory data. Looseleaf forms in a binder or spiral/bound notebooks may also be used but the pages must be numbered. All preprinted laboratory forms must contain the date(s) they apply to and the name ORTEK. Copies of all applicable pages must be included with the data for the project file, or the logbook and page number where the documentation can be found must be traceable to the final reported results either by batch number, sample number or both.

6.2 Document Control

The goal of ORTEK's document control system is to be able to supply to any client all documents relating to the analysis of his or her samples. These documents include but are not limited to; chain-of-custody forms, sample bottle lots used, sample tags (if removable), airbills, price quotes, bench sheets, logbooks, telephone conversation records, out-ofcontrol forms, QA and/or progress reports, corrective action forms, accompanying QC sample results, calibration records, worksheets with calculations, instrument printouts, and final result sheets. The criteria for an acceptable document control system is that the data and records are secure, retrievable and complete.

The following document control procedures are followed, to assure that these laboratory records are able to be assembled and stored, for efficient retrieval upon request. Details of document storage, tracking and disposition are contained in SOP OP-11.

- All laboratory records are stored in the secured laboratory area so they are not accessible to laboratory visitors or instrument service personnel.
- Locked file cabinets are utilized to store completed records, and a check out card system is used for removal of working project files or archived files.
- All original laboratory forms and data will be included in the project file, when all data from the project is compiled.
- All preprinted laboratory forms and logbook pages must contain the signature of the person conducting the work and the date the work was performed.
- The pages in bound and unbound logbooks must be

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sequentially numbered. No pages will be removed. Bound logbooks themselves will also be assigned a unique number.

- Proper error correction procedures must be followed. No information shall be obliterated or rendered unreadable. The unused portions of documents shall be crossed out with a "Z" and the person's initials and date entered.
- · All documents, notebooks and forms are to be completed in ink.
- Completed logbooks are kept in each section by the Section Manager, for quick reference. Completed project files are stored on-site for the last year. Off-site secured storage for older records is utilized for clients specifying storage for more than 1 year.
- Unless specified otherwise, project files are kept for 3 years after completion of the project.
- Any changes to LIMS must be documented on a Sample Change Record (Figure 11), and be done by the Sample Custodian or Computer Support Technician.
- All telephone conversations with clients must be documented on an ORTEK Telephone Conversation Record (Figure 12), and the original filed with the project file. All faxes, fax cover sheets, and transmission reports must also be filed in the project file.
- General laboratory records including detection limit studies, method development data, SOPs, training and personnel files, health and safety records, audit reports, control charts and performance evaluation results will be kept as long as ORTEK is in existence.

FIGURE 11

BATCH #	SAMPLE ID#
	CHANGE RECORD r LIMS change. Also initial appropri-
	the change or check appropriate box
for person who needs to make the	
Tot berson and heres to make the	ne change.
PLEASE MAKE CHANGE/DATE:	CHANGE COMPLETED/DATE:
Cample Rec.	Sample Rec
Sample Rec.	Sample Rec.
Misc	Misc WetChem
WetChem	WetChem
MetalsOrganics	MetalsOrganics
organics	019411203
CHANGE FROM:	CHANGE TO:
LAB #	LAB #
BATCH #	BATCH #
LOGIN DATE	LOGIN DATE
DUE DATE	DUE DATE
COLLECTION DATE	COLLECTION DATE
COLL-LOCATION_	COLL-LOCATION_
PRES-METHOD	PRES-METHOD
SAMPLE MATRIX	SAMPLE MATRIX
ARCHIVES	ARCHIVES
ADD WEST	
ADD TEST	
DELETE TEST	
DELETE TEST	
DEASON FOR CHANGE	
REASON FOR CHANGE	
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7.0 CALIBRATION PROCEDURES AND FREQUENCY

The purpose of calibration is to verify that the analytical instrument/equipment can provide data of known and acceptable precision and accuracy. Instrument calibration is performed by the analyst in accordance with method and instrument SOPs. Equipment calibration is periodically performed at prescribed intervals for balances, pipettes and thermometers which are relatively stable in performance. The Section Managers are responsible for equipment calibration and for supplying the documentation to the QA officer.

Laboratory analysts record and document all instrumental calibration runs in designated Laboratory Instrument or Run Logbooks. These logbooks identify instrument operating parameters, settings, and performance data associated with each instrumental calibration run.

This section describes the general calibration practices by the analyte and instrument group. Instrument specific calibration procedures are detailed in SOPs E-1 through E-15.

7.1 Measurement Equipment and Supplies

ORTEK complies with good laboratory practices in the use of measuring equipment, glassware, laboratory pure water and chemical reagents. All laboratory glassware, balances, thermometers, and subsequent volume, mass, and temperature measurements are directly traceable to primary standards. Chemical reagents are purchased of the quality specified in the SOP and/or reference method. Table 5 lists the equipment calibration frequency and limits.

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TABLE 5

EQUIPMENT PERIODIC CALIBRATION REQUIREMENTS

INSTRUMENT	CALIBRATION FREQUENCY	ACCEPTANCE LIMIT	CORRECTIVE ACTIONS		
Analytical Balances	Daily: Sensitivity (with a Class "S" weight)	See SOP OP-5	Adjust, Sensitivity		
:	Annually: Class "S" weights check	Difference less than	Service balance		
	Every 3 years: Class "S" weights check	Difference less than 0.1 mg	Replace weights		
vens	Temperature readout device checked against indicating pyrometer semi-annually	±10%	Service oven		
Chermometers	Calibrate in constant temperature bath at ice point against NIST reference thermometer	±0.5°C or ±0.2°C	Tag and remove from service, replace		
Pipetters	Volume check quarterly	High volume (>100 μL): ≤ 1.0% relative error and RSD Low volume (<100 μL): ≤ 2.0% relative error and RSD	Service or replacement		
NIST Theimometer	Recertified every 3 years		Replace		

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Laboratory volumetric glassware conforms to NIST Class A standards. Mechanical pipettes are calibrated quarterly with the MLA Pipette Volume Calibration Kit. All calibrations are recorded and documented in the designated Laboratory Calibration Logbooks. The SOPs for cleaning and storing glassware (OP-8) are posted at wash stations.

Laboratory balances are annually serviced and calibrated by an independent vendor manufacturer's service contract. Additional balance performance evaluations are conducted daily (before first use) by comparison against NBS Class S certified weights using SOP OP-5. Unacceptable performance requires service adjustments. Both balance service and daily calibrations are recorded and documented in designated Laboratory Balance Calibration Logbooks.

Laboratory thermometers are calibrated against a NIST certified thermometer annually using SOP OP-4 and recorded in the designated Laboratory Thermometer Calibration Logbook. Laboratory drying ovens, incubators, and refrigerators contain these calibrated thermometers. Temperature readings are recorded daily on the Laboratory Temperature Logsheet. Unacceptable deviation from the acceptable temperature range requires immediate corrective action as described in SOP OP-6.

Laboratory pure water is generated by a commercial online water purification system consisting of mixed resin deionizing and carbon filtration cartridges. Cartridges are routinely replaced and serviced by the manufacturer or as indicated by an on-line resistivity indicator recorded in accordance with SOP OP-6 or laboratory method blank contamination.

The Laboratory uses various types and purities of chemical reagents, solvents, and gases depending upon their intended use. Laboratory stock and working standards are derived from commercially available primary standards and solvents whenever possible. Section 2 detailed reagent, solvent and analytical standard practices.

7.2 Instrument Calibration Procedures

All instruments subject to calibration shall be uniquely numbered/identified so that calibration records can be traced to a specific instrument. EPA and manufacturer's specific calibration protocols will be followed. Source of analytical standards used, standard preparation and documentation instrument

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calibration shall comply with the requirements in Section 2.0 and follow the appropriate SOP. Minimum operations necessary to satisfy most EPA criteria for calibration are contained in Table 6. Specific procedures are detailed in SOPs E-1 through E-15 and are briefly described below by instrument:

7.2.1 GC/MS VOCs and BNAs

- Every 12 hours the instrument is tuned and must meet EPA established abundance criteria for DFTPP or BFB to assure that instrument response meets EPA specifications.
 - Generation of five point calibration curves, as the method requires, for all method compounds at least quarterly, or more frequently if needed. Recalibration is done when continuing calibration criteria is not met as specified in the EPA method.
 - Verification of volatile system cleanliness by the analysis of at least one daily reagent blank.
 - Maintain sample response within linear range of instrument by dilution.
- Addition of internal standards to each sample that must meet area count criteria of -50% to +100%.

7.2.2 GC VOCs

- Generation of five point calibration curves for all analyzed compounds at least quarterly, or prior to any sample analysis as stated in the analytical method. Recalibration is done when continuing calibration criteria is not met and the compound of interest is present in the sample.
- The initial calibration curve must have a Relative Standard Deviation (RSD) of ≤20% for Method 8010/8020, and ≤10% for Method 601/602 with continuing calibrations of ≤15%, and ≤10% respectively. (RSDs are calculated based on guidance found in SW846, Method 8000, Section 7.4.4.2.). Alternately, the linear regression performed must have a correlation coefficient greater than 0.995.

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Maintain sample response with linear range of instrument by dilution.

- Monitor consistency of instrument response through the analysis of a standard after at least every 20 sample analyses.
- Demonstrate system cleanliness through the analysis of at least one daily reagent blank.

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ABLE 6

INSTRUMENT CALIBRATION REQUIREMENTS

INSTRUMENT	CALIBRATION STANDARDS USED	CALIBRATION ACCEPTANCE LIHITS	CORRECTIVE ACTION	STANDARD SOURCE
FTIR	Wavelength calibration and curve, minimum 3 levels and blank	± 5 cm ⁻¹ true value	1) make new standards 2) service	Variable
AA (GF,CV)	Initial: 3 concentrations and blank Continuing: Midrange conc every 10 samples	r > 0.995 110% true value	 make new standards reestablish initial curve 	Variable
ICAP	Initial: 1 concentration and blank	< CRDL or IDL whichever is greater	1) make new standards	Spex or Inorganic Ventures
LACHAT UV-Visible Spectrophotometer	Initial: 3 levels and blank Daily: Check standard	r > 0.995 <u>+</u> 10% true value	1) make new standards 2) recalibrate	Variable
;C	Initial: 5 concentrations and blank	RF < 20% RSD or r >0.995 < detection limit (except acetone and methylene chloride)	1) make new standards 2) recalibrate	Supelco Ultra
JC/MS	Tuning (DFTPP or BFB) Initial: 5 concen- trations and blank Continuing: midrange conc.	EPA criteria RRF, RSD criteria for SPCC, CCC compounds for SPCC, CCC compounds	l) Retune, service 2) Recalibrate 3) Make new standards, recalibrate	Supelco Ultra
All/Conductivity	Daily: pH buffers 3 standard concentra- tions, conductivity standard	t 0.05 pH unit t 10% true conduc- tivity	Clean or replace electrode, service	Variable

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7.2.3 Pesticides and PCBs - GC/EC

The initial calibration curve must have an RSD of ≤20% with a continuing calibration of ≤15%. (RSDs are calculated based on guidance found in SW846, Method 8000, Section 7.4.4.2.). Alternately, the linear regression performed must have a correlation coefficient greater than 0.995.

Generation of five point calibration curves for all analyzed compounds monthly, prior to any sample analysis, or as stated in the analytical method. Recalibration is done when continuing calibration is not met and the compound of interest is present in the sample.

Maintain sample response within linear range of instrument by dilution.

7.2.4 Metals - ICAP

- Analysis of at least one standard and a blank.
- Verification of system cleanliness and baseline maintenance through the analysis of a continuing calibration blank (CCB) after every ten samples. Detected metals must be less than Contract Required Detection Limit (CRDL).
- Verification of instrument stability through the analysis of a continuing calibration verification (CCV) standard after every ten samples. Recovery must be 90-110%.
- Determination of instrument performance by the-analysis of an interference check sample (ICSAB) at the beginning and end of each run, or twice in an 8 hour shift with limit of 80% - 120%.
- Maintain sample concentration within the linear range of the instrument by dilution.

7.2.5 AA Furnace and Cold Vapor Mercury Analyzer

Initial and continuing calibration must be recovered at 80-120% for the Cold Vapor Mercury Analyzer and 90-110% for AA.

(. .

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- Verification of system cleanliness by a CCB analysis after every ten samples.
- Construction of at least a three point calibration curve for each element prior to the analysis of any sample set.
- Maintain sample response within linear range of instrument by dilution.

7.2.6 pH and Ion-Selective Electrodes

- Construction of a three point (2 point for pH) calibration curve prior to the analysis of any sample.
- Maintain sample response within linear range of instrument by dilution.
- Verification of cleanliness of the analytical system through the analysis of a reagent blank (where applicable).
- Verification of instrument consistency through the analysis of a standard/buffer after the analysis of every ten samples (where applicable).

7.2.7 Lachat Auto Analyzer

- Construction of a three point calibration curve prior to the analysis of any sample. The initial calibration curve must have an RSD of ≤ 20 % and r^2 of ≥ 0.995 .
- Monitor for the introduction of any interferents through the analysis of a reagent blank, prior to any sample analysis.
- · Maintain sample response with the linear range by dilution.
- Verification of the consistency of instrument response through the analysis of a lab control standard (LCS) after every twenty sample analyses for DQO level D. DQO levels C & E require a LCS after every 10 samples.

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7.3 Calibration Records

Records for periodically calibrated equipment (balances, thermometers, pipettes) must be kept by the Section Manager and include as appropriate:

- Identification number of equipment and type of equipment, or assigned unique equipment number.
- Calibration frequency and acceptable tolerances.
- Identification of calibration procedure used.
- Date calibration was performed.
- Identity of ORTEK personnel and/or external agencies performing calibration.
- Reference standards used for calibration (to be stored separately from any samples or reagents).
- Calibration data.
- Certificates or statements of calibration provided by manufacturers and independent service personnel traceable to NIST.
- Information regarding calibration acceptance or failure and any repair of failed equipment.
- Date of when next scheduled calibration is due.

Stickers or tags indicating when next calibration is due should be readily visible on equipment. Section Managers are responsible for ensuring recalibration is completed on time and documented.

For instruments and equipment that are calibrated when used (as often as daily), calibration consists of determining instrumental response against known standards or the preparation of a standard response curve. Records of these calibrations are maintained by ORTEK in two ways:

- The calibration data are kept with the affected analytical sample data (government projects, GC/MS).
- A log book or raw data folder contains all calibration data (Lachat, ICAP, AA, GC).

The first method provides response factor information directly with analytical data, for easy data validation by the Section Manager and the raw data package is

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complete. However, when samples from several projects are processed together, the location of the calibration data must be referenced in each affected project file.

The second method provides an ongoing record of the calibration undertaken for a specific instrument, and enables easier detection of trends indicating instrument problems. However, to verify the analytical data the log must be used in conjunction with the raw data.

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8.0 ANALYTICAL PROCEDURES

Analytical procedures should be selected by the client in consultation with regulatory agencies and ORTEK to meet the detection limits necessary. Whenever possible ORTEK uses EPA approved methods. Copies of these EPA approved methods are kept in each section by the Section Manager. ORTEK specific SOPs are in the process of being written to tailor the EPA reference method to the instrument used by ORTEK. These SOPs will be written in the format listed in Fig. 13.

8.1 Detection Limits

ORTEK defines the detection limit of a method as the quantity of analyte which results from the lowest differential between a signal caused by the analyte and that of random noise. Practical Quantitation Limits (PQLs) are defined as 5-10 times this signal. Metals instrument detection limits (IDL) for DQO Level D analyses by CLP protocols are determined quarterly by spiking distilled water at a concentration 3-5 times the anticipated IDL. This solution is analyzed 7 times on three nonconsecutive days and the standard deviation calculated. The IDL is determined as 3 times this standard deviation. PQLs for organic analytes are determined statistically at least annually for methods listed in Table 7 using the criteria contained in Federal Register Vol.49, No. 209, October 26, 1984, Appendix B to Part 136. For SW846 metals analyses, values above the method detection limit (MDL) will be reported. MDLS are determined from 7 low level digested distilled water spikes.

Organic analytes present in concentrations below PQL's WILL NOT be reported as present in the sample when using this analytical technique. A detection limit quantity is reported as a "less than" value(<) or "U" value. This less than or "U" value does not indicate that an analyte is not present in a sample but only that its presence is at levels below PQL. For results produced by US EPA CLP organic methods, values which are below required detection limits, but can still be quantified, are reported as estimated concentrations using a "J" qualifier. For results produced by US EPA CLP inorganic methods, values above the IDL but below the contract required detection limit (CRDL) are reported with a "B" qualifier. Values below the IDL are qualified with a "U" code.

Typical PQLs are available as an Appendix. Actual limits achievable in "real" world samples vary based on dilution requirements, background interferences, sample concentration factors and cleanup techniques. Data from studies are reviewed by the QA Officer and are kept in each section by the Section Manager.

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TABLE 7

ORTEK ANALYTICAL METHOD CAPABILITIES

WET CHEMI			META	<u>lls</u>			
	Reference		American a			Reference	
Analyte	Methods		Analyte Name			Methods	
Alkalinity	310.1		Aluminum	CLP	204 2	2041	6010
Ammonia	350.2		Antimony		204.2	7041	6010
BOD	405		Arsenic		206.2	7060	6010
COD	410		Barium	CLP			6010
Chloride	325.1		Beryllium	CLP			6010
Conductivity	120.1		Cadmium		213.2	7131	6010
Fecal Coliform	909C		Calcium	CLP			6010
Total Coliform	Colilert		Chromium, total	CLP	218.2	7191	6010
Cyanide	335.2 90	10	Chromium, hex			7196	
Flashpoint	1010		Cobalt	CLP			6010
Fluoride	340.2		Copper	CLP	220.2	200.7	6010
Hardness	130.2		Iron	CLP			6
Total Kjeldahl			Lead	CLP	239.2	7421	60°i J
Nitrogen	351.3		Magnesium	CLP			6010
Nitrate -N	325.1		Manganese	CLP			6010
Nitrite -N	354.1		Mercury	CLP	245.1	7470	7471
Nitrate &			Molybdenum				6010
*Nitrite -N	353.3		Nickel	CLP			6010
Hq	150.1 90	45	Potassium	CLP			6010
Total Phenol	420.2		Selenium	CLP	270.2	7740	6010
Oil & Grease	413.1 90	71	Silver	CLP	270.2		6010
Total Phosphorus	365.4		Sodium	CLP			6010
TDS	160.1		Thallium		279.2	7841	6010
TS	160.3		Vanadium	CLP			6010
TSS	160.2		Zinc	CLP			6010
TVS	160.4		TCLP Extraction			1311	
Sulfate	375.2		SPLP Extraction			1312	3005
Sulfide		30	Metals Digestion		3050	3020	30.0
TCLP Extraction		11	2290011011				
SPLP Extraction		12					
DIED DYCTECTON	13						

ORGANIC CHEMISTRY

Analyte			Met	hods			
Volatile Organics	CLP	8240	624	5030	8021	8260	
Semivolatile Organics	CLP	8270	625				
Pesticides/PCB's	CLP	8080	608				
Halogenated Volatiles		8010	601				-
Aromatic Volatiles		8020	602				
Chlorinated Herbicides		8150				-	
Polynuclear Aromatic							
Hydrocarbons			610	8310			
TRPH		418.1					
TPH-Gasoline(purge & trap)		Califo	ornia	DHS			
TPH-Diesel(extractable)		Califo	ornia	DHS			
ZHE Extraction		1311					
Aqueous Sample Extraction		3510	3520)			
Solid Sample Extraction		3550					
Sample Clean-up		3610	3620	363	30	640 36	60

Reference

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REFERENCES TO TABLE 7

References

909 C: Standard Methods for the Examination of Water and Waste

water, 16th edition.

100-300 series: Methods for Chemical Analysis of Water &

Wastes, EPA-600/4-79-020

1000-8000 series: Test Methods for Evaluating Solid Waste, 3rd

edition.

CLP: US EPA Contract Laboratory Program Statement of Work

Inorganics 7/88, 3/90 or 1/91 US EPA Contract

Laboratory Program Statement of Work-organics 2/88,

3/90 or 1/91.

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8.2 Variance From Analytical Methods/ORTEK SOPs

Analyses will be performed in accordance with the methods cited in Table 7 unless specific project/client requirements dictate an alternate method or modification of the cited methods. The alternate method must be documented in accordance with Figure 13 in an ORTEK Laboratory Operations SOP.

If an existing SOP needs modification, the analyst will prepare a memo to the QA Officer stating what changes are prepared and the justification for change. The Section Manager and QA Officer must review and approve these changes prior to implementation. If the changes are determined by the QA Officer to be substantive, the EPA or other affected regulatory agency will be contacted for approval prior to implementation.

FIGURE 13

FORMAT FOR ORDER STANDARD OPERATING PROCEDURE SOF

Laboratory Method

Title (include reference to EFA or other approved method number)

- 1. Scope and Application
 - 1.1 Amalytes
 - 1.2 Detection limit (instrument and method)
 - 1.3 Applicable matrices

 - 1.4 Working linear range 1.5 Approximate analytical time (i.e., 5 minutes, 2 days) and throughput (# samples/shift)
- 2. Summary of Method Generic description of method and chemistry
- 3. Comments
 - 3.1 Interferences/corrective action
 - 3.2 Helpful hints
- 4. Safety Issues
- Sample Collection, Preservation, Containers, and Holding Times minimum sample volume necessary for analysis sample storage 5. Sample Collection. storage location and disposal concerns
- 6. Apparatus instrument and operating parameters, instrument logbook format
- 7. Readents and Standards Shelf life, source, disposal-
- 8. Procedure (detailed step-by-step)
 - 8.1 Sample preparation
 - 8.2 Calibration
 - 8.3 Analysis
 - 8.4 Documentation logbook format, any bench forms used
- 9. 01/00 Requirements
 - 9.1 QC samples what kind, when, how prepared 9.2 Acceptance criteria

 - 9.3 Corrective action required
 - 9.4 QC onecklist
- 10. <u>Calculations</u> examples, forms used
- 11. Reporting
 - 11.1 Reporting units
 - 1.2 Reporting limits
 - 11.3 Significant figures and reporting values below detection
 - limits. 11.4 LIMS data entry
 - 11.5 Data package contents/list
- 12. References
 - 12.1 Method source
 - 11.2 Deviations from reference method and rationale
- 13. Method Detection Limit Data and Protocol

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9.0 DATA REDUCTION, VALIDATION & REPORTING

Data reduction is the process of compiling all pertinent results, calibration records, and QC data, and producing a report to the client that is accurate and meets his requirements. Data validation is the process of reviewing data generated against a pre-established set of criteria to determine its validity. Data reporting is the process of producing the results in a format suitable to the client and ensuring that it accurately represents the results of the reduction and validation processes. The inter-relationship of these activities is presented in Figure 14.

9.1 Data Reduction

The ORTEK laboratory uses the Telecation Smartlabe computerized Laboratory Information Management System (LIMS) to accomplish several data acquisition activities: laboratory sample log-in, sample result archival, sample status & tracking, and final report generation. This system is summarized below:

- Smartlab® assigns individual laboratory identification numbers and prints labels for each sample.

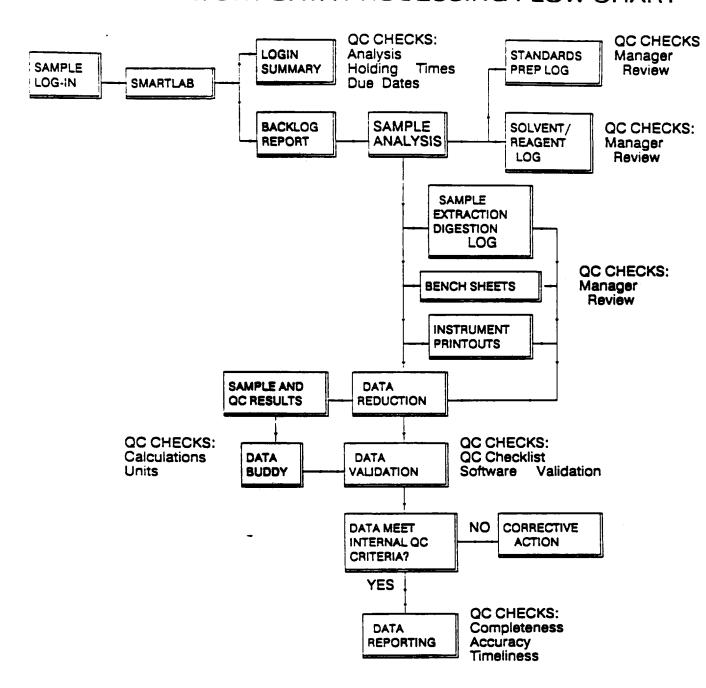
 Sample data input includes client sample ID, analytical test methods required, matrix, turnaround time, collection date and holding time requirements.
- Smartlab® assimilates the sample data and generates backlog reports for each section of the laboratory for scheduling & prioritizing analyses. These reports identify the analytical parameters, the method, the turnaround time requested and critical holding time considerations.
- Analysts or data entry person enter their completed sample analytical results into Smartlabe. The section manager reviews the run and if data are acceptable, approves the run. Approval of the run removes the sample analyses from the backlog as completed and a final report is generated.
- CLP data package forms are generated through independent software system. When the entire CLP Sample Delivery Group (SDG) is complete it is removed from the LIMS backlog.

9.1.1 Raw Data Generation

All analytical data are generated either by computer data reduction systems (GC, GC/MS,ICAP, AA) or by manual calculation (Hg, Wet Chemistry). Manually calculated data are entered into spiral bound logbooks, and into Smartlabe. All extractions, sample preparation, standards preparation and instrument runs are also entered

FIGURE 14

LABORATORY DATA PROCESSING FLOW CHART



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into bound logbooks. Copies of these pages related to each project are sent with the data for review for QC level D. Each set of analytical data is therefore traceable to specific lots of standards, digestion or extraction dates and instrument runs. Data are generated by the analyst in one of the following ways:

- By manual computation of results directly on a data sheet or on calculation pages attached to the data sheets.
- By entering raw data into the computer for processing.
 - By direct acquisition and processing of raw data by the computer.

If data are manually generated by the analyst, all steps in the computation will be specified, including equations used and the source of input parameters such as response factors, dilution factors, and sample weights/volumes. The analyst will sign and date <u>in ink</u> each page of calculations.

If data are directly acquired by the computer from the instrument and a printout is supplied, the analyst will verify that the following can be traced to the raw data: calibration results, response factors, QC sample results and numerical values used for detection limits. Units and correct sample numbers must be checked.

Each section of the laboratory uses a checklist format to verify that all applicable dates & QC were analyzed. These checklists are presented in Figures 15 - 18. Each SOP laboratory method is to be consulted for the applicable QC limits, the calculations/equations to be used, the appropriate number of significant figures and the correct reporting units.

9.1.2 Raw Data Verification

A "data buddy" system allows for the review of calculations done by each analyst by an independent analyst. This check is to include the math, checking the dilution factors against the final result and verifying that proper units are reported. SOP OP-17 details the procedure to be used.

FIGURE 15 ORTEK

WET CHEM STANDARD QC CHECK LIST

1)	ORTEK BATCH #:	_ 2) CLIENT:			
3)	# OF SAMPLES: WATER	SOIL		OTHERS	
4)	LAB #'S			·	
	· · · · · · · · · · · · · · · · · · ·				
5)	MET HOLD TIME: D YES D NO				
6)	PARAMETER:	· · · · · · · · · · · · · · · · · · ·			
7)	DATE ANALYZED:				
8)	QC SUMMARY:				
	A) CHAIN OF CUSTODY CHECK	ED 0			
	B) INITIAL CALIBRATION DATE	[/	/ 91]		
	C) DAILY CALIBRATION [/ / 91]	□ PASSED	O NOTRE	EQUIRE
	D) LABORATORY BLANK	< MDL BL	ANK CORREC	CTION [
	E) SPIKE RECOVERY			% =	PASSE
	F) DUPLICATE(% ERROR)	···	· · · · · · · · · · · · · · · · · · ·	0	PASSE
9)	CASE NARRATIVE:				
		· · · — · · · · · · · · · · · · · · · ·			<u>-</u>
				<u></u>	
A۱	NALYST	DATE _			
				· · · · · · · · · · · · · · · · · · ·	•
ΑF	PPROVED BY SUPERVISOR:		DATE		

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					C	DR.	TE	K-	- A	A C	C	CI	HE	Ck	< LI	SI	Γ						
1) ORTEK BLAN	K#				2) N	1ETH	IOD					3) #	SAN	1PLE	:s	v	TAV	ER		so	IL_		OTHER
						5) DATE ANALYZED																	
6) QC SUMMARY:																							
	Αl	Sb	As	Ва	Be	Cd	Ca	Cr	Со	Cu	Fø	Pb	Mg	Mn	Hg	Ni	κ	Se	Ag	Na	TI	٧	Zn
STD PREPARED ICV PASSED CAL PASSED ICB PASSED P B PASSED SPIKE PASSED DUP. PASSED LCS PASSED ICSA ICSAB	00000	00000	0 0 0	0	0 0 0	0 0	00000	0	000000	0 0 0 0 0 0 0	0 0 0 0	0000000	0000	0000000	0 0 0	000000	0000000	0 0 0 0 0 0	00000	0 0 0 0 0	000000	00000	D
BS/BSD	0	O	0	0	0	0	0	۵	0	0	O	0	0	0	0	0	0	0	0	a	0	0	0
		D S .	AME	E BA	TCH	1 0	ВА	TCH	1#_					_	0 N	OT	REC	JUIF	RED				
MAN.S.PASSED	U	0	0	O	0	0	0	0	0	0	a	a	0	0	0	0	0	0	۵	0	0	0	O
	ł	S	AME	E BA	TCF	i 0	ВА	TCH	#_					-	o N	ОΤΙ	REC	UIF	RED				
CASE NARRATIVI	E:_																						
																							
ANALYST SIGNAT	rur	E_													ĺ	DAT	E : _						

FIGURE 17 ORTEK

GC OC CHECK LIST

.)	ORTEK BATCH #	2) CLIENT
)	# SAMPLES: WATER	SOILOTHERS
)	DATE RECEIVED	MET HOLDING TIME: [] YES [] NO
5)	METHOD	6) DATE ANALYZED
7)	QC SUMMARY:	
	A) CHAIN OF CUSTODY CHECKE	ם []
	B) INITIAL CALIBRATION DAT	E [/ / 90]
	C) DAILY CALIBRATION [/ / 90] [] PASSED
	D) LABORATORY BLANK [] < MDL
	E) SURROGATE RECOVERY	[] PASSED
	F) SPIKE RECOVERY	[] PASSED
	G) BS/BSD ANALYZED FROM	
	[] SAME BATCH [] BA	TCH [] NOT REQUIRED
	H) MS/MSD ANALYZED FROM	
	[] SAME BATCH [] B	BATCH [] NOT REQUIRED
	I) LIMS CHECKED AGAINST CO	OMPUTER PRINT OUT []
3)	CASE NARRATIVE:	
	· · · · · · · · · · · · · · · · · · ·	
	ANALYST	DATE:
==	######################################	
ΑP	PROVED BY:	DATE:

FIGURE 18

GC-MS QC CHECK LIST

BATCH #			CLIENT		_ DATE RECEIVED				
ETHOD			INSTRUMENT I	D	LIMS RUN #				
			WATERS	oir _	TCLP	OTHER			
YES	ио	N/R				_			
[] [] [] [] [] [] [] [] [] []	[] [] [] [] [] [] [] [] [] []	[] [] RATIVE	3rd BLANK/_ 4th BLANK/ INTERNAL STANDARD ARE SURROGATES PASS (If n BS/BSD PASS MS/MSD PASS CONTROL CHARTS PLOTTE ITEMS:	[] ncluding 1 [] 1 [] 1 [] /91 [] /91 [] /91 [] /91 [] AS PASS o explain [] D	SAME BATCH BFB OF DFTPF SAME BATCH	[] OTHER			
						DATE			
						_			
						DATE			

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9.2 Data Validation

ORTEK data are validated during collection and after generation by a series of steps that minimizes the possibility of reporting results that do not meet client DQOs. These steps include assuring all software used is accurate, the instrument is properly calibrated and the method used is not biased.

9.2.1 Software

As computer software is used to acquire, process and report data, periodic demonstration that it is operating correctly is required. This consists of comparing its performance against known results. SOP OP-15 details how specifically this will be accomplished, and a summary is described below:

If the program has been prepared external to ORTEK and is accepted by regulatory agencies as an "industry standard," independent verification is not required. However, when the program is first used on an ORTEK system, available example problems must be processed to demonstrate that the program is fully operational. Example problems must test the capabilities of the software. Industry standard programs are defined as those which are widely used throughout the environmental lab community (i.e. Formaster, Smartlabe) and are brought into ORTEK and used without modification.

For programs that are developed within ORTEK and externally prepared programs that are modified by ORTEK, complete checking of performance is required. Checking is dependent upon the function of the software and could include:

ror software that only performs numerical manipulation, sample sets of numbers for which the results are known must be processed and compared. In this case, known results are usually generated by performing hand calculations using the same equations and procedures as the software.

Verification of the software must test all options of the program. Problems must test both the theory, or basis for computation and the ability of the software to store and manage files.

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Software that performs as part of instrument operation should be verified by processing reference materials through the instrument system. Processed instrument response should be compared against the standards used.

Software will be verified whenever modification is made. The test problems used to provide initial verification will be reprocessed and the results compared to demonstrate that performance of the software is unchanged. If software performance has changed, the effect of the change upon intended function and since last verification will be assessed. Effect must be determined on a case-by-case basis for the scope and impact of incorrectly reported results. necessary, the data will be reprocessed and recipients of affected data reports notified.

Software verification shall be documented by the individual performing the work, signing and dating in ink the computer output, and supporting calculations. If test problems are used, the input will be marked with check marks to indicate correct usage and the output checked to indicate acceptable comparison. If reference materials are used as the basis for verifying instrumental related software, the "true" values or certificates will be included with the output.

9.2.2 Instrument Calibration

All instruments used in the generation of analytical results must be properly calibrated in accordance with the SOP as summarized in Section 7.0. No sample data can be generated on an instrument until the requirements for initial calibration are fulfilled (i.e. correlation coefficient RRF, %RSD). Calibration results must be reviewed and approved by the Section Manager as indicated by his signature on the QC checklist.

9.2.3 Analytical Method Assessment

The QC checklist items used to validate data that are related, to how valid the methods performed are: lab method and holding blank results, blank spike (BS)/blank spike duplicate (BSD) recoveries, and laboratory control standard recoveries. The results of these QC checks are not dependent on sample matrix interferences and must be within acceptance

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limits listed in Section 10 in order for the analysis to be considered valid.

Field blank and trip blank results, surrogate spike recoveries, matrix spike/matrix spike duplicate recoveries and field or lab duplicate RPD are all sample collection or matrix dependent and do not necessarily indicate if the data was generated by a valid method on a properly calibrated instrument. Results out of acceptance limits are noted on the data result sheet or case narrative to alert the client of a possible sample collection or matrix problem.

Figure 19 presents the order of data validation and the actions required. All QC data are then reviewed by the Section Manager to ensure that the proper number, type of QC samples and appropriate limits were used. The Section Manager indicates his review by signature of the QC checklist. In addition, 10% of the project files generated each month are reviewed by the QA Officer to assess if the data validation process is being followed.

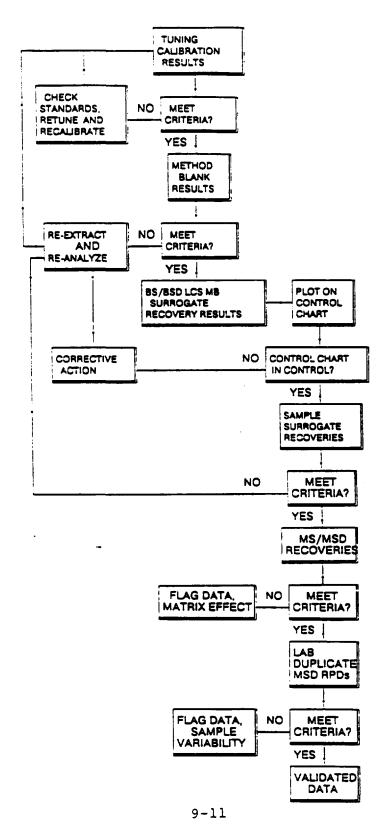
9.3 Data Reporting

The format and content of a data report are dependent upon project needs, such as whether or not a CLP data package, case narrative, or QA Summary is required, client or contract requirements, and government reporting formats. ORTEK is flexible and does not specify a report format, but all reports must meet the requirements in SOP OP-10 which are summarized below:

- Data are presented in tables whenever possible.
- All result sheets and/or a cover letter/case narrative are signed by the Laboratory Director or Assistant Laboratory Director. This signature indicates that he has reviewed the data for:
 - Completeness results for all parameters requested are present; detection limits, units, dates, and sample descriptions are complete and correct.
 - Consistency all parameters are reviewed for internal consistency (hexavalent chromium \leq total chromium, TKN \geq NH₃-N, TS \geq TSS, total metals \geq dissolved metals).
 - Sample identification number used by ORTEK and the sample identification provided to the laboratory by the client.

FIGURE 19

DATA VALIDATION PROCESS FLOW



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Chemical parameters analyzed, reported values, units of measurement, and analytical method used for the types of analysis specified (if requested by client).

- Detection limit of the analytical procedure if less than the detection limit is reported.
- Data for a chemical parameter reported with consistent significant figures.
- Results of Quality Control sample analyses if requested.
- Explanation of any out-of-control events that affect data quality (holding times, preservatives, surrogates).
 - Explanation of any data qualifiers used such as "B" denotes an organic contaminant that is common to both the lab blank and the sample, while "J" denotes the presence of a compound, but at a level less than the detection limit.

Any results faxed to clients or verbally transmitted are considered preliminary until a formal hard copy is received. Fax transmittal sheets and telephone conversation records, regarding transmittal of results, must be kept in the project file.

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10.0 INTERNAL OC CHECKS AND FREQUENCY

This section describes the types of QC samples which are prepared by ORTEK and routinely analyzed with client samples to demonstrate that ORTEK is operating within known precision and accuracy, representativeness, completeness and comparability limits. Table 8 summarizes these QC samples and indicates their frequencies, limits and applicabilities. Client supplied QC checks (field blanks, rinsate blanks, field duplicates, splits, collocated samples) are not included.

10.1 Precision QC Samples

Precision is defined as the reproducibility of analytical measurements. It is a quantitative measure of the variability of a group of measurements compared to their average value, and is dependent on sampling <u>and</u> analytical error.

10.1.1 Lab Duplicate (LD)

A sample is split by ORTEK and both aliquots are analyzed separately to assess method precision. The relative percent difference (RPD) is calculated. Metals and wet chemistry sections use this QC sample.

<u>Frequency</u>: One per 20 samples or daily, whichever is more frequent.

<u>Limits</u>: Less than 20% RPD water, less than 20% RPD soil.

10.1.2 Blank Spike Duplicate (BSD)

This sample is prepared as in 10.2.7. The RPD is calculated between the Blank Spike (BS)/BSD pair. If the variability between the BS/BSD exceeds limits, the analytical system is out of control and too unstable to provide valid sample data. Any associated "real" samples must be reextracted and reanalyzed.

Frequency: One per 20 samples or daily whichever is more frequent.

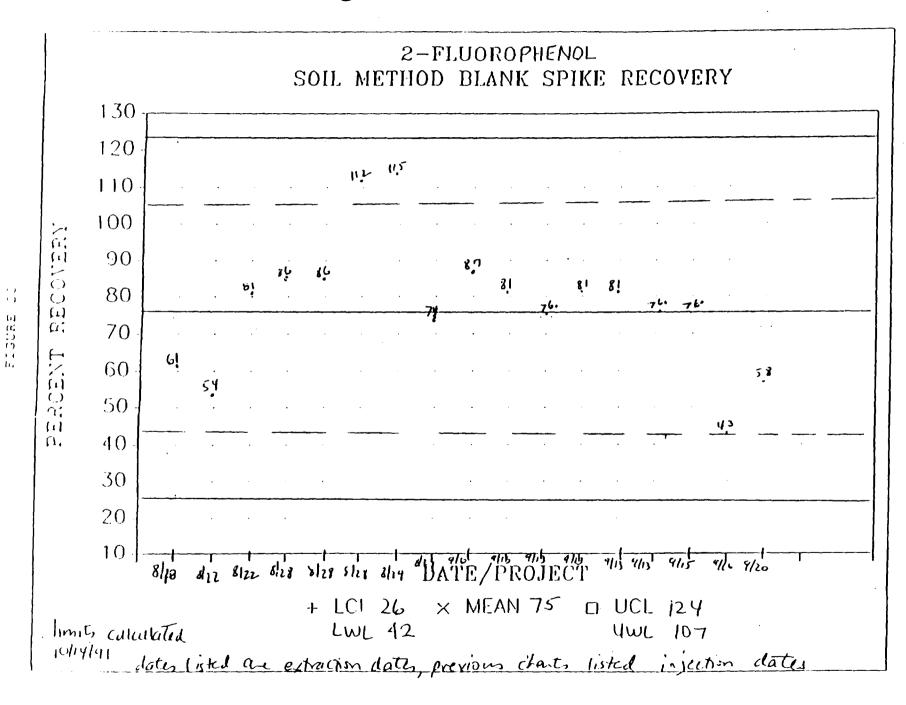
Limits: Less than 20% RPD.

Table 8		INTERNAL QC CHECKS & FREQUENCY										
ANALYTE	BLANKS				DUPLICATES & SPIKES						CONTROL STANDARD	
	ТВ	ZZZ	PS	мв*	LD	BS/BSD	MS/MSD	мѕ	ss	AS	IS	LCS
ALKALINITY			-	1/10	1/10	1/20						1/10
AINOMMA			P	1/10	1/10	1/20		1/10				1/10
BOD				DAILY	1/10	1/20						1/10
COD			P	1/10	1/10	1/20		1/10				1/10
CHLORIDE				1/10	1/10	1/20		1/10		~-		1/10
CONDUCTIVITY				1/10	1/10							1/10
COLIFORM				1/10	1/10							
CYANIDE			P	1/10	1/10	1/20		1/10				1/10
FLASHPOINT					1/10			1/10				1/10
FLUORIDE				1/10	1/10	1/20		1/10				1/10
HARDNESS				1/10	1/10	1/20		1/10				1/10
KJELDAHL NITROGEN			P	1/10	1/10	1/20		1/10		~-		1/10
NITRATE-N	-		P	1/10	1/10	1/20		1/10				1/10
NITRITE-N	1	-	P	1/10	1/10	1/20		1/10		-		1/10
NITRATE AND NITRITE				1/10	1/10	1/20		1/10				1/10
PH					1/10			~-				1/10
PHENOL, TOTAL			P	1/10	1/10	1/20		1/10				1/10
OIL & GREASE			P	1/10	1/10	1/20		1/10				1/10

	ТВ	ZZZ	PS	мв*	LD	BS/B SD	MS/MSD	MS	SS	AS	18	LCS
TOTAL PHOSPHORUS			P	1/10	1/10	1/20		1/10				1/10
TDS				1/10	1/10					-		
TS					1/10		1	•				
TSS				1/10	1/10				1			
TVS				1/10	1/10				1			
SULFATE				1/10	1/10	1/20		1/10		1		1/10
SULFIDE				1/10	1/10	1/20		1	ı	-		1/10
TAL METALS			P	1/20	1/20	1/20 BS only	-	1/20		100		1/20
TCLP METALS			P	1/20	1/20	1/20		1/20				1/10
TRPH			PS	1/10	1/10	1/20		1/10				1/10
TCL VOLATILE	1/C	1/C	PS	1/20		1/20	1/20	-	100%		100%	
TCL SEMIVOLATILES			S	1/20			1/20		100%		100%	
TCL PCB/PESTICIDE			S	1/20		1/20	1/20		100%			
GC VOLATILES	1/C	1/C	PS	1/20			1/20		100%			
TPH - GRO				1/20			1/20					
TPH - DRO			s	1/20		1/20						
HERBICIDES			S	1/20		1/20		1				
THE VOLATILES	1/C	1/C		1/20			1/20				100%	
TCLP SEMIVOLATILE			s	1/20				1/20	100%		100%	
TCLP PESTICIDES			s	1/20				1/20	100%			
TCLP HERBICIDES]	s	20				1/20				

TABLE 8 LEGEND

тв	TRIP BLANK			
1/C	ONE PER COOLER RECEIVED			
ZZZ	HOLDING BLANK			
Р	PRESERVATIVE CHECK			
S	SOLVENT QC CHECK			
МВ	METHOD BLANK			
LD	LAB DUPLICATE			
BS/BSD	BLANK SPIKE/BLANK SPIKE DUPLICATE			
MS/MSD	MATRIX SPIKE/MATRIX SPIKE DUPLICATE			
MS	MATRIX SPIKE			
ss	SURROGATE SPIKE(S) ADDED			
AS	ANALYTICAL SPIKE (POST DIGEST)			
IS	INTERNAL STANDARDS ADDED			
LCS	LAB CONTROL STANDARD OR EPA REFERENCE STANDARD			
* OR AT	* OR AT LEAST DAILY, WHICHEVER IS MORE FREQUENT			
100% = F	100% = EVERY SAMPLE SPIKED			



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10.1.3 Matrix Spike Duplicate (MSD)

The matrix spike duplicate is prepared as in Section 10.2.8 and the RPD calculated between the MS/MSD pair. If the variability between the MS/MSD exceeds limits, the associated sample data case narrative or

report sheet shall contain a note to this effect.

Frequency: One per 20 samples of a similar matrix.

Limits: method and matrix dependent.

10.2 Accuracy QC Samples

Accuracy is defined as the bias of analytical measurements. Sources of bias are the sampling process, field contamination, sample preservation, handling, sample matrix, laboratory sample preparation, and analysis.

10.2.1 Trip Blanks (TB)

Volatile organics samples are susceptible to contamination by diffusion of contaminants through the teflon septum of the sample vial. Trip blanks are prepared by ORTEK in accordance with SOP OP-19, are shipped with the coolers to the client, and are analyzed to monitor possible sample contamination during shipment. Trip blanks accompany the sample bottles through collection and shipment to the laboratory and are stored with the samples. If the trip blanks indicate contamination, the client may decide to correct data for the trip blank concentration or re-sample. Results of trip blank analyses are reported with the corresponding sample analytical data.

Frequency: Two 40 ml. volatile vials per cooler containing volatile samples, analyze one.

<u>Limits</u>: Check if holding and lab blanks also contain same analytes, report results.

10.2.2 Field Blanks (FB)

A field blank is "pure" water or soil used to demonstrate the absence of contamination during sampling. Deionized, distilled laboratory water, or Ottawa sand supplied by ORTEK on request is placed into sample Section # 10.0

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containers by the client, packaged, and shipped with the other field samples. If the field blanks indicate possible contamination of the samples depending upon the nature and extent of the contamination, the client may decide to correct sample data for the field blank concentration or resample. Sources of contamination may include: Containers; sample storage facilities; field handling procedures; and sampling equipment. Results are reported with the corresponding sample analytical data.

<u>Frequency</u>: One per 10 field samples or daily recommended by EPA.

Limits: Not applicable, report results.

10.2.3 Rinsate Blanks (RB)

A rinsate blank is a volume of rinse solution (deionized, distilled lab water or organic solvent) used to rinse a sampling tool which contacts multiple samples. The rinse solution is collected by the client after the tool has collected a sample and has been cleaned, to demonstrate that there is no residual contamination on the tool to carry over into the next sample. rinsate blank indicates possible contamination of the succeeding samples, the client may decide to correct data for the rinsate blank concentration or resample. Results of rinsate blank analyses are reported with the corresponding sample analytical data.

Frequency: One per 10 field samples or daily recommended by EPA.

<u>Limits</u>: Not applicable, report results.

10.2.4 Method Blanks (MB)

A method blank is a volume of deionized, distilled laboratory water for water samples, or Ottawa sand for soil/sediment samples carried through the entire analytical procedure. The volume or weight of the blank must be approximately equal to the sample volume or sample weight processed. If the concentration of an analyte in the blank is above the CLP CRDL or MDL, the sample with the least concentration analyte must be greater than

10 times the blank concentration, or all samples associated with the blank and less than 10 times the blank concentration must be redigested, reextracted and reanalyzed. No sample values will be corrected for the blank value. Analysis of the blank verifies that method interferences caused by contaminants in solvents, reagents, glassware, and other sample processing hardware are known and minimal.

Results of method blanks are reported with the data for volatile organics analyses, and kept in the project file for other analyses.

<u>Frequency</u>: One per 20 samples analyzed or daily, whichever is more frequent.

<u>Limits</u>: Less than detection limit or less than 10 x lowest detected sample level for inorganic analytes (Phthalates, methylene chloride, and acetone).

10.2.5 Preservative or Solvent Blank (PS)

This blank consists of the chemical(s) added to the client samples during preservation or extraction. It is prepared and analyzed in accordance with SOP OP-20. Detection of analytes necessitates rejection of the lot.

<u>Frequency</u>: One per each set aside lot of chemical.

Limits: Less than detection limit.

10.2.6 <u>Holding Blanks (ZZZ)</u>

Holding blanks are laboratory precleaned sample containers filled with laboratory distilled water and stored with client samples. Results of the analytes are kept by the sample custodian to assess storage area cleanliness. These blanks are prepared in accordance with SOP OP-18. Detection of analytes necessitates rejection of the lot of bottles.

Frequency: One per gross of bottles (144).

Limits: Less than detection limit.

10.2.7 Blank Spikes/Blank Spike Duplicate (BS/BSD)

A blank spike/blank spike duplicate is a volume of laboratory distilled water or Ottawa sand spiked with the analytes or subset of analytes of interest and analyzed using the same procedure as the samples. Recovery of the analyte(s) is plotted on a control chart. Analysis of these samples with acceptable recoveries and no out of control conditions as defined in Section 13 indicates that the laboratory method is in control and acceptable accuracy has been achieved.

<u>Frequency</u>: One per batch of 20 samples or daily, whichever is more frequent.

Limits: As set by SOP OP-21.

10.2.8 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

To determine the accuracy of the method in the real sample matrix, two separate aliquots of a sample are spiked with the analyte or subset of analytes of interest and analyzed with the sample. The percent recovery is calculated and compared against advisory limits cited in each SOP. If the percent recovery is outside of the limits in both samples, a matrix effect may be suspected and the report contains a note on the matrix effect. Matrix spikes only are applicable for wet chemistry and metals analyses.

<u>Frequency</u>: One per batch of 20 samples or daily, whichever is more frequent.

<u>Limits</u>: As set by SOP, variable for organics, generally 75-125% for wet chem/metals.

10.2.9 Analytical (Post Digestion Spikes) (AS)

Target metals at a known concentration are added to an aliquot of the sample digest for GFAA just prior to analysis to assess if matrix effects (suppression or enhancement) are present. If results are outside limits, the data report indicates that the sample exhibited a matrix effect. Further analysis may be required as indicated in the SOP for GFAA analysis.

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For ICAP analyses, if the matrix spike fails and the concentration of the sample does not exceed four times the spike level, a post digest spike must be done at twice the indigenous level or at twice the CRDL, whichever is greater.

Frequency: Every sample for GFAA analysis (CLP protocol).

Limits: 85-115%.

10.2.10 <u>Internal Standards (IS)</u>

A known concentration of analyte (organic) not expected in environmental samples is added to the sample extract just prior to analysis. It measures instrument performance and is used to normalize data for quantitation. Reinjection of the sample is done if results are not acceptable.

Frequency: Every real sample standard and internal QC samples.

Limits: -50 to + 100% area counts.

10.2.11 Surrogate Spikes (SS)

Surrogates are organic analytes that also are not expected to be found in environmental samples and their behavior mimics those of the target analyses. All samples, blanks and internal QC samples are spiked with surrogates prior to purging or extraction for GC or GC/MS analyses. Reanalysis of samples occurs if a specified number of surrogates are outside limits.

Frequency: Every real sample, standard and internal QC sample.

Limits: As contained in SOP.

10.2.12 <u>Laboratory Control Standards (LCS)</u>

A standard of midpoint concentration on the curve or a known EPA reference standard/sample is to be analyzed to assess the accuracy of the calibration curve and the stability of the instrument response. For metals analysis the LCS is the BS. This is in addition to the calibration requirements listed in Table 6. For CLP aqueous samples, the LCS is the digested initial calibration verification solution (ICV).

whichever is more frequent.

Frequency: One per 20 samples or daily,

Limits: 80-120%.

10.3 Representativeness QC Samples

Representativeness is defined as the degree to which sample data accurately and precisely represent the environmental conditions. It is controlled by selecting proper sampling locations and collecting sufficient number of samples.

10.3.1 Field Duplicate

If ORTEK is aware of the identity of the field duplicates in the project samples, an assessment of field collection and homogenization techniques and/or site variability can be made by calculating the RPD.

Frequency: One per 10 field samples collected is recommended by EPA.

Limits: Not established.

10.3.2 <u>Collocated Sample</u>

Collocated samples are independent samples collected simultaneously at a given sample location and time. Two charcoal tubes from a common manifold or two surface water samples collected at the same time and depth are examples. These samples indicate the precision attainable over both the field collection and analytical system. Wide variability may indicate the matrix sampled is too nonhomogeneous and more points are needed to provide "representative" samples.

Frequency: One per 20 samples recommended by EPA.

Limits: Not established.

10.4 Completeness QC Samples

Valid data at 100% completeness is the goal of the QA program. Since no specific internal QC checks measure completeness, this goal is achieved only if the SOPs are followed for calibration, operation and analysis. Acceptable blank spike recoveries and surrogate spike recoveries will be used to approximate completeness.

10.5 Comparability QC Samples

Comparability is defined as the confidence with which one group of data can be compared with another. It is controlled by using standard sampling and approved EPA analytical techniques.

10.5.1 Split Samples

A split sample is divided into 2 portions in the field and analyzed by ORTEK and an independent laboratory using the same EPA method. Comparison of results is usually done by the client by calculating RPD.

Frequency: One per 20 samples recommended.

Limits: Client determined.

10.5.2 External Performance Evaluations

ORTEK participates in inter-laboratory round robin tests supplied by the US EPA. A report of the true values and acceptable statistical limits are received and are used to assess each section's performance.

Frequency: Quarterly.

Limits: EPA determined, study specific.

10.6 Control Charts

Control charts are a graphic tool to view the statistical performance of a method to enable early detection of out-of-control situations. Method performance is tracked by control charts only after a blind performance evaluation sample is successfully passed and when the parameter is an analyte in a NAVY/HAZWRAP project requiring control charts.

Blank spike and/or blank spike duplicate percent recoveries for each parameter listed in Table 9 are to be plotted on a Shewhart Control Chart (Figure 20). Limits are set in accordance with SOP OP-21. Analysts are responsible for plotting the points as they are generated.

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CONTROL CHART PARAMETERS

Analyze Group	Matrix	Compound(s)	QC Sample Charted
Volatiles GC/MS	Soil & Water	d ₈ toluene Bromofluorobenzene	Method Blank
		d ₄ -1,2-dichloroethane	
Volatiles GC	Water & Soil	trifluorotoluene	Method Blank
Semivolatiles GC/MS	Soil & Water	2-fluorophenol 2-fluorobiphenyl d ₅ -nitrobenzene d ₆ -phenol d ₁₄ -terphenyl 2,4,6-tribromophenol	Method Blank
PCB/Pesticides	Soil & Water	Aroclor 1248 or 1254 dieldrin 4,4'-DDT	BS/BSD
ICAP Metals	Soil & Water	Lead Cadmium Chromium	LCS
Mercury	Soil & Water	Mercury	LCS
Hexavalent Chromium	Soil & Water	Hexavalent Chromium	BS/BSD
GFAA metals	Soil & Water	Arsenic Selenium Lead Thallium	LCS
TPH-IR	Soil_& Water	TPH	BS/BSD
Cyanide	Soil & Water	Cyanide	BS/BSD

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Limits are initially calculated and updated after 20 points are generated by the QA Officer. Updated control charts are released to each Section Manager quarterly for distribution and posting in each affected lab area. Out of control conditions have been defined by the NEESA/HAZWRAP program as follows:

- One point outside the upper or lower limit.
- Three consecutive points outside the upper or lower warning limit.
- Eight consecutive points on one side of the centerline.
- Six consecutive points such that each one is larger or smaller than its immediate predecessor.
- · Any cyclic pattern is seen over time.

Many factors lead to analytical problems that show up in control charts. The symptoms seen on control charts are either due to a shift or trend as described below:

Symptom	Possible Causes
Shift in centerline after updating	 incorrect standard preparation incorrect reagent preparation systematic contamination of system incorrect instrument calibration analyst error
Trend Upwards	deterioration of standarddeterioration of samples
Trend Downwards	 concentration of standard due to evaporation of solvent deterioration of reagents
Increase in variability	 analyst performance (new analysts, deviation from SOP, poor technique)

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Once an out of control condition has been identified and documented on an Out-of-Control Form, corrective action must be taken and documented and no additional data generated until the next point is in control. Suggested corrective actions are in order of completion:

- 1. Check calculations
- 2. Check age of spiking solution
- 3. Make new spiking solution
- 4. Reanalyze affected batch
- 5. Check age of stock spike standard
- 6. Make new stock spike standard
- 7. Reanalyze affected batch

Control charts are included in all data packages for Navy (NEESA) and HAZWRAP projects and should be submitted in the project file to Client Services.

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11.0 PERFORMANCE AND SYSTEMS AUDITS AND FREQUENCY

Performance audits independently collect data from the QA system using performance evaluation samples and are quantitative. Results are usually expressed as falling within or outside of statistically determined acceptance limits. System audits are the review of the entire data production process and consist of on-site inspection and a review of documentation. System audits are qualitative and consist of an audit report containing any deficiencies. Data audits consist of reviewing client project files for appropriate QC results and documentation from sample receipt through disposal. Data audits are conducted monthly on randomly selected projects or in response to data challenges from clients.

These audits are performed to:

- Determine that contractual/regulatory criteria are met.
- Determine that the ORTEK SOP's and this QA Program Manual are being followed.
- Verify that document control procedures are followed.
- Establish that DQO's are met, including that holding times and report due dates are met, approved methods and SOP's are followed, and stated frequencies and limits for precision, accuracy, representativeness, completeness and comparability are met.
- Serve as a management tool to evaluate the effectiveness and appropriateness of ORTEK's QA Program.

Results of all audits are communicated to the President, Laboratory Director, Assistant Laboratory Director and affected Section Managers by the QA Officer. Blame is not assigned, but request for investigation of any deficiencies and proposed corrective action and schedule for implementation is requested. Each Section Manager is to respond in writing, to document corrective action and avoid repeating of the same deficiency.

11.1 Performance Audits

The QA Officer is responsible for preparation of any internal single blind performance evaluation (PE) samples and insertion of any double blind external (PE) samples into the ORTEK analytical system.

Single blind PE samples are obtained from commercial sources such as Environmental Resource Associates and are used after an external PE has indicated deficiencies. Once corrective action has been taken

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and documented by affected sections of the lab, the QA Officer will prepare full volume samples, and "dummy" up sampling documentation such as the chainof-custody form to disguise the PE sample as a real sample. Client Services Personnel only will be aware of the identity of the "dummy" samples.

Double blind PE samples are sent to ORTEK from EPA. These samples are not disguised as real samples and are usually contained in sealed glass ampules or vials. The QA Officer does not prepare full volume samples from the PE ampules. Each section of the lab is responsible for correctly diluting and spiking samples as indicated by the directions. Double blind studies ORTEK participates in and their frequency are listed below:

U.S. EPA CLP PE Samples	Quarterly, through EPA Region Region V and EPA EMSL-LV
U.S. EPA Water Pollution Studies	Semiannually
U.S. EPA Water Supply Studies	Semiannually
Wisconsin Department of Natural Resources Recertification samples	Annually
U.S. Navy NEESA/HAZWRAP Recertification samples	Annually
U.S. Army Corps of Engineers laboratory validation PE samples	Every 18 months

11.2 Systems Audits

ORTEK is annually inspected by US Navy (NEESA)/HAZWRAP personnel or their contractors. Every 3 years, the Wisconsin Department of Natural Resources conducts an on site inspection. Every 18 months prior to recertification, the US Army Corps of Engineers performs an on-site evaluation. Other clients audit ORTEK on a project specific basis.

Quarterly, an internal on-site audit is conducted by the QA Officer. One section of the lab (sample receiving/Document Control, wet chemistry, metals, organics) is chosen each quarter. A predesigned checklist will be used that includes the following items as applicable:

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· Sample Operations

- Are stated temperatures for sample storage monitored?
- Are samples extracted and analyzed within prescribed holding times?
- Are samples properly logged in, stored, and disposed of?

· Calibration

- Are calibrations performed as required?
- Are calibration records properly documented in instrument log books, or as part of project data if required?
- Do calibration results indicate a trend in instrument performance?

· Preventive Maintenance

- Are adequate spare parts available?
- Do specific instruments have repeated maintenance problems?
- Is preventive maintenance performed and properly documented?
- Receipt and storage of standards, chemicals, and gases
 - Are all reagents, chemicals, and gases purchased for use in the laboratory of adequate grade for the intended use?
 - Are certifications and QC checks done when required?
 - Are they kept beyond stated shelf life?
 - Are they properly prepared, stored and documented?

· Analytical Methods

- Are the methods used appropriate for project requirements?
- Are detection limit studies available and current?
- Are alternate methods approved for use?

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· Data Verification

- Are data processed and validated as prescribed?
- Are control charts updated, with out-of-control conditions noted and corrective action documented?

· Records Management

- Are the records of analyses complete and properly identified?
- Is chain of custody fully documented?

The QA Officer will meet with the Laboratory Director, Assistant Laboratory Director and affected Section Manager prior to beginning the audit to discuss what will be audited. At the close of the audit, the findings will be discussed with them. A corrective action plan and implementation schedule will be discussed and agreed upon if deficiencies are found. An audit report will be written by the QA Officer to include:

- Date/location of audit.
- Persons contacted in the lab, specific lab operations/records audited.
- Description of items requiring corrective action and, if possible, the means for correction.
- Due date for completion of corrective action.
- Means of verifying completion of corrective action.
- Review of the Quality Assurance Program implementation in the section.

The audit report will be issued within 10 days after completion of the audit.

The Section Manager is responsible for responding to the audit report. The response will be in writing to the QA Officer and will state the corrective action taken or the action underway. If correction can be verified, the Section Manager should attach documentation of the corrective action to the audit response. Upon receipt of the audit response, the QA Officer must verify completion of the corrective action. After this verification, the QA Officer will issue a closure statement stating that all corrective

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action has been completed and the audit is closed. All audits must be closed and entered on the corrective Action Log.

11.3 Data Audits

Data audits are done monthly by the QA Officer to address the precision, accuracy, representativeness, and completeness of the data. Projects are selected at random or as requested by clients through verbal data challenges or written data verification requests. A memo is written by the QA Officer that details the findings. The Laboratory Director, Assistant Laboratory Director, and Section Managers are to respond to deficiencies as requested.

11.4 ORTEK Certifications

The following certifications have been obtained by ORTEK:

- · Wisconsin Department of Natural Resources
- · U.S. Department of Energy, HAZWRAP Program
- · U.S. Navy NEESA Installation Restoration Program (Pending)
- · U.S. Army Corps of Engineers, Missouri River Division for DERA/DERP sites
- · 8(a) Program, US Small Business Administration
- · Disadvantaged/Minority Business Enterprise, City of Madison
- · Disadvantaged Business Enterprise (DBE)
 - · Wisconsin Department of Transportation
 - · Illinois-Department of Transportation
- Minority Business Enterprise (MBE)
 - · Wisconsin Department of Development
 - · Wisconsin Supplier Development Council
 - · Joint Certification Program, Milwaukee, WI

Copies of certification documents are available upon written request.

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12.0 PREVENTIVE MAINTENANCE

Preventive maintenance (PM) is an organized program of actions (such as equipment cleaning, lubricating, reconditioning, adjustment and/or testing) taken to maintain proper instrument and equipment performance and to prevent instruments and equipment from failing during use. The purpose of PM is to increase reliability of data reported and reduce downtime. ORTEK's preventive maintenance program includes the following:

- Instruments, equipment, and parts that are subject to wear or deterioration without proper periodic maintenance.
- Spare parts that should be readily available to minimize downtime.
- Frequency that maintenance is required and documentation that it was performed.

Implementation of the preventive maintenance program is dependent upon the specific instrument and manufacturer. This manual does not designate specific PM for each instrument and equipment but lists in Table 10 the general practices that are applicable. The equipment SOP includes the PM specific to each instrument.

Each Section Manager is reponsible that analysts properly conduct and document PM. Documentation must be recorded in each instrument or maintenance logbook.

TABLE 10 PREVENTIVE MAINTENANCE GUIDANCE

INSTRUMENT	ITEM CHECKED/SERVICED	FREQUENCY
Atomic Absorption	Burner head	Each shift
Spectrophotometer	Electrical	Each shift
	Lamps	Each shift
	Nebulizer	Each shift
	Optics	During PM Service Calls
	Graphite tube	As necessary
	Replace graphite tube	As needed
	Replace contact rings	As needed
·	Replace quartz windows	As needed
	Clean optics	As Needed
	Align background lamp	When changed
Gas Chromatograph	EC (Ni-63) wipe test	Semi-annual
_	Clean detector	As needed or EC Semi-annually
		FID monthly
	Change column	As needed
	Change glass wool plug	Weekly
	Clean insert	Weekly
	Replace septum	Daily
	Gas purity check	Upon receipt of new cylinders
	Flow controller	Semi-annually
	Purge and trap	As needed
	Change fuses	As needed
	Reactivate external carrier gas filler dryers	Weekly
	Reativate flow controller filter dryers	Semi-annually
	Clean and silanize or replace glass liners on	•
	injectors	As needed or quarterly
	Clean Detectors a) ECD	As needed
	b) FID, Hall	As needed or annually
	Clean Purge Vessel	As needed or monthly
	Replace Purge Vessel	As needed
	Bake Trap	As needed
	Replace Trap	Semi-annually
	Replace carbon filter	Annually

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TABLE 10 (Continued)

INSTRUMENT	ITEM CHECKED/SERVICED	FREQUENCY
ICAP	Sample introduction system	Daily
	Replace o-rings and water filters	As required
	Clean optics	As needed
	Clean torch	As needed
	Change oil and dessicant	Annually
	Check electronics	Daily
	Clean, realign torch	As Required
	Clean nebulizer tips	Daily
	Clean mixing chamber	As Needed
	Replace pump tubing	Daily if left
		hooked up
Lachat	Clean and dry random access sampler	Daily
Autoanalyzer	Clean boats and check placement	Daily
-	Clean sensor with cotton swab	Daily
	Spray proportioning pump with silicone,	Every 50 hours,
	wipe rollers	(2500 samples)
	Check pump waste lines	Every 50 hours,
		(2500 samples)
	Replace injection module flares	Ewery 500 hours,
	•	(25,000 samples)
	Clean unions, replace O-rings	Every 500 hours,
	•	(25,000 samples)
	Clean manifold fittings	Every 500 hours,
		(25,000 samples)
	Replace manifold O-rings	Every 500 hours
		(25,000 samples)
	Rewrap coils	Every 500 hours,
		(25,000 samples)
	Clean and dry colorimeter	As needed
	Run "clean disk" in computer	Every 500 hours
Refrigerators	Temperature checked and logged	Daily
Bal ances	Service representative calibration	Annually

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TABLE 10 (Continued)

Instrument	ITEM CHECKED/SERVICED	FREQUENCY
Deionized/Nanopure Water	Conductivity check	Daily
	Ion exchange bed changed	Weekly
	Replace filters	As needed
GC/MS	GC/MS maintenance is the same as GC with the additions:	following
	Mechanical pump oil	Quarterly
	Power Con. air filter	Bi-Weekly
	QEM filter	Bi-Weekly
	Turbo pump oil	Semiannually
	Water filter (if applicable)	Observe and change as needed
	Computer air filter	Monthly
	Card cage air filter	Monthly
	Source-clean ceramics, polish lenses	As needed
	Clean poles and ceramics on the poles	As needed
	Clean contacts on the component boards	As needed
	Vacuum the component boards	As needed
	Clean all fan scr eens	Weekly
	Vacuum outside of instrument	Weekly
	Clean grob and replace quartz insert	As needed
	Replace septum	Daily (each shift)
	Injection port liner checked	Daily
	Column maintenance	As needed

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TABLE 10 (Continued)

INSTRUMENT	ITEM CHECKED/SERVICED	Frequency
Infrared Spectrophotometer	Clean cells	Daily
pH Meter Electronics checked Electrolyte changed		Daily Checked weekly, changed when low

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13.0 SPECIFIC ROUTINE PROCEDURES TO ASSESS DATA PRECISION, ACCURACY AND COMPLETENESS

The purpose of this section is to describe how data from e QC samples listed in Section 10.0 are treated to determine data quality. Data accuracy and precision are calculated as percent recovery or relative percent difference (RPD). Data completeness is calculated as the overall percent of blank spike samples in control.

13.1 Data Precision Calculation

To determine the precision of the method and/or analyst, a routine program of sample duplicate analyses is performed. These may also be blank spike or matrix spike/matrix spike duplicate pairs. The results of the duplicate analyses are used to calculate the relative percent difference (RPD) which is defined as the difference (range) of each duplicate set, divided by the average value (mean) of the duplicate set, times 100 percent. For duplicate results D₁ and D₂, the RPD is calculated from Equation 13-1:

RPD % =
$$\frac{D_1 - D_2}{D_1 + D_2} \times 100\%$$
 (13-1)

When the RPD is obtained for at least 20 duplicate pairs, the average RPD and the standard deviation are calculated using:

$$\underline{ \begin{array}{ccc} & n & \\ \Sigma & m_i & \\ \hline m & = & \underline{i=1} & \\ & n & \end{array} }$$
 (13-2)

$$\begin{array}{rcl}
& & & & \\
& & \Sigma & (m-\overline{m})^2 \\
Sm & = & & \underline{i=1} \\
& & & & \\
\end{array}$$

where

m = the RPD of a duplicate pair,

 \overline{m} = the average of the RPD values,

Sm = the standard deviation of the data set of RPD values, and

n = number of RPD values used.

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Control limits are calculated from these data as follows:

Upper control limit = \overline{m} + 3Sm,

Lower control limit = m + 2Sm,

Lower warning limit = \overline{m} - 2Sm, and

Lower control limit = \overline{m} - 3Sm.

Control charts are not kept for RPD statistics. Original limits are distributed to analysts and Section Managers by the QA Officer and updated at least annually by the QA Officer. CLP protocols specify that any out of CLP limit duplicates be qualified with an asterisk.

13.2 Data Accuracy Calculation

To determine the accuracy of an analytical method and/or analyst, a sample and blanks are routinely spiked. The results of matrix, matrix spike duplicate, blank spikes, and blank spike duplicates are used to calculate the quality control parameter for accuracy evaluation, the Percent Recovery (%R). Blank spike recoveries and method blank surrogate recoveries are plotted on control charts.

The %R is the observed concentration, minus the sample concentration, divided by the true concentration of the spike, times 100 percent:

$$R = O_i - O_s \times 100$$
 (13-4)

where

%R = the percent recovery,

O_i = the observed spiked sample or blank concentration,

O_s = the unspiked sample or blank concentration, and

 T_i = the true concentration of the spike.

The true spike concentration is calculated from Equation 13-5:

T_i = Spike Concentration (mg/L) x Volume of Spike (in ml)

Volume of Sample [in ml] + Volume of Spike [in ml]

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When the percent recovery is obtained for at least twenty blank spike samples, the mean percent recovery and the standard deviation are calculated using the formulas:

$$\frac{n}{\Re R} = \frac{\sum_{i=1}^{n} \Re R_i}{n}$$
 (13-6)

and

$$S_{R} = \frac{\sum_{i=1}^{n} (\$R_{i} - \$R)}{\sum_{n=1}^{n} (13-7)}$$

where

R; = percent recovery,

%R = Mean percent recovery,

 $MR_i = 1R_{i-1}(R_{i-1}) 1_i = 2,3,...n$

 MR_2 = average moving range of 2 successive recoveries,

n = number of results, and

 $d_2 = 1.128.$

Control limits are calculated from these data as follows:

Upper control limit = $\$R + 3R_2/d_2$,

Upper warning limit = $R + 2R_2/d_2$,

. Centerline = %R,

Lower warning limit = $R - 2R_2/d_2$, and

Lower control limit = $\$\overline{R} - 3R_2/d_2$.

Control charts are kept for blank spike and lab blank surrogate recoveries. All original limits are calculated by the QA Officer, distributed to Section Managers and analysts and updated at least annually by the QA Officer.

13.3 Data Completeness Calculation

To determine the completeness of an analytical method and/or analyst, blank spikes or method blanks spiked with surrogate compounds are analyzed. The

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number of blank spikes (BS) or method blanks (MB) with recoveries within control limits are counted and assessed against the total number analyzed as follows:

(13-8)

% Completeness = # BS or MB in control
total # BS or MB analyzed

13.4 Data Set Assessment

When analysis of a project/batch is completed, the results will be reviewed as described in SOP OP-17 and evaluated in accordance with Figure 19. Briefly, review and evaluation are done for the items listed below in order:

- 1. Calibration results.
- 2. Holding times laboratory blank results.
- 3. Blank spike/lab control standard recoveries.
- 4. Surrogate spike recoveries.
- 5. Duplicate sample and Matrix Spike/MSD results.
- 6. Field/shipping QC results (trip blanks, field blanks and field duplicates).

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14.0 CORRECTIVE ACTION

Out of control conditions as documented on ORTEK's Out-of-Control Form (Figure 3) must be corrected. Corrective actions are to be logged by the QA Officer using the Corrective Action Log (Figure 21). All Out-of-Control Forms must be routed to the QA Officer for determination, if the client needs to be notified.

14.1 Out-of-Control Conditions

An out-of-control condition is an unauthorized deviation from SOPs, methods, or a defect that could lead to the data quality not meeting client needs and/or internal QC checklimits. Out-of-control conditions may be caused by lab operations or field operations (documentation not complete, inadequate preservation) that are identified by ORTEK. Out-of-control conditions include, but are not limited to:

- Sample holding time exceeded.
- Sample preservation and/or pH not adequate.
- · Sample receiving paperwork not correct.
- Detected analytes in blanks.
- Instrument calibration requirements not met.
- Sample storage requirements not met.
- Chain-of-Custody broken.
- · Incorrect sample preparation/analysis used.
- · Internal QC sample data outside limits.
- Data recording or transcription errors.
- · Failure to document data.
- · Data validation errors.

The affected samples/clients and batches are to be identified on the Out-of-Control Form and the QA Officer contacted immediately for consultation on appropriate resolution and responsibility.

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FIGURE 21

ORTEK CORRECTIVE ACTION LOG

Date Issu <u>ed</u>	Responsible Manager	Description	Corrective Action Completion Dates Target Actual	QA Officer Verified Date	How Verified	Closeout Date
			-			
	-					
·····						
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14.2 Corrective Action

Corrective action is defined as the effective measure applied to correct and minimize the possibility of recurrence of an out-of-control condition. Examples of corrective actions include, but are not limited to:

- Recalibration.
- Preparation of new standards.
- Preparation of new reagents.
- Reanalysis of samples.
- Additional training of personnel.
- Client notification/consultation (i.e., improper sample preservation, insufficient volume).

14.3 Responsibility for Corrective Action

All employees are responsible for reporting out-ofcontrol conditions that they observe or identify.

The employee should initiate the Out-of-Control Form
and give it to the Section Manager and sign the
"Report by" line. They must also indicate under
ACTION TAKEN, the person notified, and date. All
original (golden rod) Out-of-Control Forms must
accompany the project data and be included in the
project file. A copy must be sent to the QA Officer
to log into the Corrective Action Log for follow-up.

Each laboratory Section Manager is responsible for documenting and correcting problems that might affect data quality in accordance with the requirements of this section. The Section Manager is responsible for stopping work in the event of out-of-control situations, and notifying the QA Officer. With the QA Officer, the Section Manager is responsible for determining whether reported problems affect data quality, concurring with the proposed corrective action, and notifying the QA Officer that corrective action has been completed.

The QA Officer is responsible for reviewing Out-of-Control Forms, recommending or approving proposed corrective actions, maintaining an up-to-date corrective action log, verifying that corrective action has been completed, distributing and filing out-of-control forms and assisting in resolving disagreements. With the Laboratory Director and Section Managers, the QA Officer also is responsible for determining whether reported problems are serious enough to stop lab operations and establishing

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schedules for completion of corrective action. The QA Officer is responsible for assisting in resolving disagreements and quality problems, and performing audits of the laboratory for compliance with the corrective action.

14.4 Corrective Action Requested by External Auditors

Results of PE samples and audit reports are sent to affected Section Managers and the Laboratory Director by the QA Officer. If the sample results/audit identify deficiencies that require corrective action, the QA Officer will complete an Out-of-Control Form for each deficiency and log each into the Corrective Action Log. The QA Officer will request a turn time on the action and verify that action is taken in order to prepare a written response to the external auditor (if requested). All affected Section Managers will receive a copy of the response.

Upon notification by the external auditor of acceptance of the corrective action, the QA Officer will notify the responsible Section Manager and the Laboratory Director. If corrective action is not acceptable, the QA Officer will fill out a new Out-of-Control Form until the problem is satisfactorily resolved, at which time the closeout date is documented in the log. The QA officer will file the records pertaining to the out-of-control conditions with the external audit documents.

Out-of-control and required corrective action can also result from the ongoing laboratory review of lab by the QA Officer. These activities are discussed in Section 11.0.

A summary of out-of-control conditions will be reported monthly to the Laboratory Director. Corrective actions for out-of-control conditions that are detected after data have been reported must also be reported by the QA Officer to the Laboratory Director by a copy of written memos in response to client data verification requests or verbal data challenges.

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15.0 QUALITY ASSURANCE REPORTS TO MANAGEMENT

If the performance of the laboratory is not reported frequently and concisely to ORTEK management, the effectiveness of the QA program is diminished. Reporting of internal and external systems, performance audits, out-of-control conditions and corrective actions taken are done through three means:

15.1 Weekly Management Meetings

Each week, all Section Managers, the Assistant
Laboratory Director, Marketing Director, Laboratory
Director, QA Officer and President meet to discuss
laboratory operations and personnel issues. Items
are solicited for the agenda prior to the meeting and
minutes are distributed for the purpose of
documenting responsibilities. At these weekly
meetings the QA Officer transmits the status of
audits, PE sample analyses, out-of-control conditions
identified and results of client data challenges.

15.2 Monthly Data Audit Reports

The findings of the QA Officer's random project file review as described in Section 11 is transmitted monthly (by the 10th of the following month) to the Laboratory Director, President and affected Section Managers. A summary of out-of-control conditions reported each month are also included to enable Section Managers to assess continuing problem areas. Written results of client data challenges and verifications are also transmitted at least monthly to the Laboratory Director and affected Section Manager.

15.3 Quarterly Internal Lab Audit Results

The written findings of the QA Officer's quarterly audit of a section of the laboratory as described in Section 11 are transmitted to the Laboratory Director, President and affected Section Manager.

15.4 Client Monthly Progress Reports/QA Reports

Major government clients are provided with Monthly Progress Reports (MPRs) upon request, as provided for in the contract. These MPRs follow a format specified by the client. NEESA/HAZWRAP reports must include:

- Project name, number and contract/subcontract number.
- List of client sample numbers, ORTEK sample numbers, analyses requested.

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- Date collected, date extracted and date analyzed.
- Copies of Chain-of-Custody Forms signed by ORTEK.
- New lab methods, equipment or changes in old methods.
- Changes in QA personnel or other personnel (resumes attached).
- Copies of Out-of-Control Forms and Corrective Action Log as they apply to specific project samples.
- · Control charts pertinent to project samples.
- External audit results and corrective action plans and written responses.

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16.0 <u>DATA DELIVERABLES</u>

The specific data and reporting format necessary is client dependent. DQO levels C,D, and E have a predefined list of data to be included as defined on Table 11. Other client deliverables, unless otherwise specified, consist of the analytical result sheet only. QA Summary Reports (Figure 22) are prepared for a fee by the QA Officer and should be requested by the client prior to sample analysis.

The completeness of data deliverable packages of level C,D, and E are to be checked by the assigned ORTEK Project Manager prior to release to the client. Noncompliant data packages are those with missing information as identified by the QA officer during random data audit review or by the client. The QA Officer will notify the affected Section Manager of specific missing items for resolution before resubmittal to the client.

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ABLE 11

DATA DELIVERABLES - LEVEL C

Analyte Group	CASE NARRATIVE	I	CLP FORMS XI- I II III IV V VI VII VIII IX X XIV					CONTROL CHART MB BS LCS			OTHER REQUIREMENTS					
Volatiles- GC/MS	х	х	x	х	х	х	x	х	х				x			
Semivolatiles- SC/MS	х	х	x	х	х	х	x	х	х				x			
PCB-Pesticides	х	х	х	х	Х	Х	х	х	х	х		1		х		
/olatiles-GC	x	Х*	X*	X*	Х*		Х*	X*					х			2nd column confir- mation data, initial and continuing response factors & & D from initial
tetals/CN	х	Х	х	х	х	х	х		x		х	X			х	
let Chemistry	х	X*		х	Х*									, х		%RSD from initial calibration

PTES: MB = Method blank, surrogate recoveries charted

BS = Blank spike, recovery charted

LCS = Lab control standard, recovery charted

* ORTEK to supply format for review by client.

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ABLE 11

DATA DELIVERABLES - LEVEL D

	CASE NARRATIVE		CLP FORMS XI- CHART													
Analyte Group		I	II	III	IV				VIII	IX	X	XIV	МВ		LCS	OTHER REQUIREMENTS
Volatiles- GC/MS	х	x	x	х	х	х	x	х	x				x			Full CLP package
Semivolatiles- GC/MS	X	x	x	х	х	х	x	х	х				x			Full CLP package
PCB-Pesticides	х	X	х	х	X	Х	х	х	х	х	х			х		Full CLP package
Volatiles-GC	х	Х*	х*	X*	Х*		Х*	х*					x			As in Level C plus all chromatogram of samples, QC and standards, prep records
Metals/CN	х	x	x	х	х	х	x	х	х	X	х	х			х	Full CLP package
Wet Chemistry	х	х		X*.	X*									, х		As in Level C plus all absorbances, digest/prep logs and instrument printouts

OTES: MB = Method blank, surrogate recoveries charted

BS = Blank spike, recovery charted

LCS = Lab control standard, recovery charted

* ORTEK to supply format for review by client.

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TABLE 11

DATA DELIVERABLES - LEVEL E

Analyte Group	CASE NARRATIVE	I	11	111	IV	CLP FORMS V VI VII VIII			ıx x	x	XI-	CONTROL CHART MB BS LCS		r	OTHER REQUIREMENTS
Volatiles- GC/MS		x			х				!			x			
Semivolatiles- GC/MS		х			x							х			
PCB-Pesticides		х			х								х		
Volatiles-GC		Х			х						1	х			
Metals/CN		Х			х									х	
Wet Chemistry		Х			х			 					х		

OTES: MB = Method blank, surrogate recoveries charted

BS = Blank spike, recovery charted

LCS = Lab control standard, recovery charted

* ORTEK to supply format for review by client.



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Attn:							
Batch ID Our Lab # Your Sampl Sample Mat	ie ID: trix :				Rep	ort Date:	
		CO	LLECTION IN	IFORMATION	1		
Dates: Location:			,				
Analyte	Lab Blank Conc.	Lab Duplicate RPD	Matrix Spike %Recovery	EPA Lab Control Standard RPD	Blank Spike %Recovery	Blank Spike Duplicate %Recovery	Sample Number used for QC
	 	<u> </u>					
NA = NOT RPD = REL BS = BLAN	DETECTED APPLICABLE ATIVE PERCINK SPIKE ANK SPIKE	ENT DIFFERE	ENCE				

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17.0 REFERENCES

This section contains a list of references used during the preparation of this QAPM. For ease of reading, no footnotes or specific reference citations were used in the manual. These references are available from the QA Officer and ORTEK employees are encouraged to consult them to learn more about specific QA/QC policies.

F.M. Garfield, Quality Assurance Principles for Analytical Laboratories, Association of Official Analytical Chemists, Arlington, VA 1984.

US EPA Laboratory Data Validation Guidelines for Evaluating Organics Analyses, February 1, 1988.

US EPA Laboratory Data Validation Guidelines for Evaluating Inorganic Analyses, July 1, 1988.

US EPA Contract Laboratory Program Statement of Work for Organic Analyses, OLM01.1-.6.

US EPA Contract Laboratory Program Statement of Work for Inorganic Analyses, ILM02.01.

US EPA, "Guidelines and Specifications for Preparing Quality Assurance Program Plans," EPA QAMS-004/80, EPA-600/8-83-024.

US EPA, "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans," EPA QAMS-005/80, EPA-600/4-83-004.

US EPA, "Guidelines for the Preparation of Standard Operating Procedures (SOPs) for Field and Laboratory Measurements," US EPA Region V, March 16, 1989.

US EPA, "Final Standard Quality Assurance Project Plan Content Document," US EPA Region V, June 1989.

US ACE, "Chemical Data Quality Management for Hazardous Waste Remedial Activities," Department of the Army, US Army Corps of Engineers, ER-1110-1-263, October 1, 1990.

US EPA, "Content Requirements for Quality Assurance Project Plan," US EPA Region V, January 1989.

DOE, "Requirements for Quality Control of Analytical Data," DOE/HWP-65/R1, July 1990.

US Navy, "Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program," NEESA 20.2-047B, June 1988.

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US EPA, Handbook for Analytical Quality Control in Water and Wastewater Laboratories, EPA-600/4-79-019.

US EPA, Data Quality Objectives for Remedial Response Activities, EPA/540/6-87-003.

US EPA, National Enforcement Investigations Center (NEIC), Example Standard Operating Procedures for CLP Laboratories, Revised 3-86.

US EPA, Handbook for Sampling and Sample Preservation of Water and Wastewater. EPA 600/4-82-029 and Addendum EPA-600/4-82-039.

US EPA QAMS, "Calculation of Precision, Bias and Method Detection Limit for Chemical and Physical Measurements," March 30, 1984.

J.U. Taylor, "Quality Assurance of Chemical Measurements," Analytical Chemistry, Volume 53, No. 14, December, 1981.

American Chemical Society, "Principles of Environmental Analyses," <u>Analytical Chemistry</u>, Volume 55, pp 2210-2218, 1983.

US EPA, Manual for the Certification of Laboratories Analyzing Drinking Water, EPA-570/9-82-002.

US EPA, Users Guide to the Contract Laboratory Program, December, 1988.

US EPA, Region V, "Central Regional Laboratory SARA/Superfund Sample Handling Manual," March, 1989.

US EPA, "Notes on Application of Practical Statistics to Environmental Measurements," December, 1983.



DEPARTMENT OF THE ARMY CORPA CHENGINEERS, OMAHA DISTRICT 215 NORTH 17TH STREET OMAHA, NEBRASKA \$8102-1978

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

77 WEST JACKSON BOULEVARD CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

FEB 03 1993

Gene Liu U.S. Army Corps of Engineers Attn: CEMCO-ED-ED 215 North 17th Street Omaha, NE 68102-4978

Dear Mr. Liu:

U.S. EPA has reviewed the Draft Fre-Design Field Investigation (PDFI) Report. In general, the document was very well written; however the following comments must be incorporated into the document before it can be considered "final":

- 1. Page ES-4, Third Paragraph, third and fourth lines-the depths of excavation for Trust 454 and BVs G Transport, six feet and 15 feet, respectively, are excessive. The data would suggest excavation of these properties to approximately two feet followed by confirmatory campling with further excavation as indicated by the analytical results. Whether to excavate deeper in the area of boring BV-002 should be decided after a TCLP test is run on the contaminated material in the deeper sone. This comment will greatly affect the estimate of excavation quantities for the Hain Industrial Property.
- 2. Page ES-4, Last Paragraph the statistical methods need to be discussed again between U.S. EPA, U.S. ACE, and Woodward-Clydo. It is true that U.S. EPA and U.S. ACE agreed to the statistical methods employed in the report; however, the example for Decision Unit #15 on page 59 raises some questions that need to be answered before the report is finalized.
- Page 5, second lineminsert "estimated" between "The" and "boundaries".
- 4. Page 5, Section 1.3-add a sentence after the first sentence as follows: "U.S. EPA wrote a letter dated January 10, 1989 which contained an addendum to the RI Report".

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- 5. Page 5, Section 1.3 add a sentence before the last sentence as follows: "On January 10. 1990, U.S. EPA released an addendum to the FS Report".
- 6. Page 9, Section 2.1.1, last line-insert "for the Main Industrial Property" between "standard" and of".
- 7. Page 9, Section 2.1.1.1, line 3- "BY & G Transportation" is not the name of the company, it is "BY & G Transport.

 Please change this wherever it appears in the report.
- 8. Page 54, Second Paragraph see comment #1.
- 9. Page 56, Section 4.1.2 conclusions about the suitability of the "on-site" borrow material should be summarized in this section.
- 10. Page 59, Statistical Test example see comment #2.
- 11. Page 60, sixth line why is cultivated/uncultivated relevant? This needs to be resolved before the excavation soil volume estimates are accepted.
- 12. Page 61, section 4.3 U.S. EPA will accept the soil volume estimates for the remote fill areas for the purposes of this report; however, it should be understood that these estimates may be in error because the criteria used by U.S. EPA in the Record of Decision were 500ppm lead or visual battery case material, not depth of fill material.

1

- 13. Figure 3 Sand Road is mislabelled on this Figure. "Chain of Rocks Road" is the east-west road that is currently labelled as "Sand Road" on the figure. Sand Road is actually the north- south road that is approximately one inch from the right border of the figure.
- 14. General Comment Is there a list of the appendices anywhere in the report? If not, please include such a list in the Table of Contents.
- 15. Attachment 1, Page 5, Section 1.3, Option A, first sentence this must be discussed. The ROD called for "consolidation within the area of contamination".
- Attachment 1, Page 8, Section 2.1, line 2 delete "uncultivated" from this line.
- Attachment 1, Page 8, Section 2.1, second sentence it is U.S. EPA's intent to remediate soil from the easement area.
- 18. Attachment 1, Page 14, Section 3.2 material from the remote fill areas will not be transported to the Main Industrial Property.

- 19. Attachment 1, Page 18, "Property Access" Row, "Time Required" Column property access for residential areas will require 4 12 months.
- 20. Attachment 2 this attachment is not necessary for the remote fill areas, but may be applicable to consolidation of contaminated materials on the Main Industrial Property (See Comment #15). Please change the title accordingly.
- 21. Attachment 2, Page 4, last sentence provide an explanation of why the "non-process" materials will not be part of the Study, or include these materials in the study.
- 22. Attachment 3, Page 2, last full sentence the wording of this sentence is contingent on comment #15.
- 23. Attachment 4, Page 2, Second Full Paragraph, last line replace "non-residential areas" with "the Main Industrial Site".
- 24. Attachment 4, Page 2, cluster of three bullet points for the first bullet point, where is the explanation for the estimate of 290,500 cubic yards? Second bullet point - as stated previously, this estimate is too high. Third bullet point - delete this statement - this material will be disposed of off-site.
- 25. Attachment 4, Page 5 last paragraph rewrite this paragraph to preclude the use of subgrade soils from the SLLR site.

 These soils may be contaminated, and what would be used to replace them?

This is the final comment letter regarding the draft PDRI report. I am available to participate in a meeting or conference call to discuss comments #2 and #11 and any other comments you may wish to discuss. Please contact me at (312) 886-4742 to arrange a meeting/conference call.

Sincerely.

Brad Bradley

Remedial Project Manager

cc: Brian Kulnan, IEPA

To: Gene Liu CEMRO-ED-ED From: Sandy Frye CEMRO-ED-EH

Re: NL/Taracorp Draft Final Predesign Sampling Report

Date: 29 Oct 92

Review Comments:

1. General Comment.

As per our discussion on 28 Oct 92, it is my understanding that the ROD for this site will probably be reopened due to recently detected lead contamination of the groundwater in excess of 50 ppb and as such the agency will require removal of the slag piles and other sources of contamination rather than capping of said materials. In light of this, the sampling report seems to adequately address issues pertaining to delineating the extent of the contamination. If the EPA determines that consolidation and capping of the soil is still appropriate, then other issues need to be considered. Some of these issues are presented in the comments that follow.

2. Attachments Volume, Section 1.3, page 5.

Keep in mind that the EPA has issued the final rule for solid waste disposal facility criteria (Federal Register, Oct 9, 1991) and that part or all of the new sections 40 CFR 257 and 258 may apply to the consolidation area.

3. Attachments Volume, page 1, second paragraph.

Two weeks does not seem to be an adequate amount of time in which to expect local governing bodies to review a scope of work for remedial activities. If the ROD is reopened, this should not be a factor as an additional period for public comment will be required.

4. Volume I, page ES-5.

Here and elsewhere in the document an MCL for lead of 50 ppb is referenced. The MCL for lead is no longer 50 ppb and the document needs to be corrected accordingly.

To: Gene Liu

From: Colleen Cleary, (Temp.)

Subject: Draft Final Report: NL/TARACORP; Superfund Site; Granite City, Illinois; WCC Project # 89MC114V; October 1992

Date: October 20, 1992

- 1. p. ES-4 First paragraph under Conclusions and Recommendations. "Decision Units" needs to be defined here as well as in the actual Report.
- 2. p. 18 2.1.5 First paragraph, last sentence. Please correct and clarify this sentence to read "The initial address information provided to WCC by the USEPA...".
- 3. p. 59 The equation used to find P should be included in the text. Clarify where the numbers came from.
- 4. p. 85 4.4.1.4 Pesticides & PCBs The first sentence should read: "Pesticides & PCB constituents analyzed for in groundwater samples are included in Table 9."
- 5. General spelling corrections:
 - p. ES-4 Top paragraph, last sentence. Correct "were" to "was".
 - p. 43 3.1.2 Third paragraph, last sentence. Correct the spelling of consistent.
 - p. 71 Third complete paragraph. Correct the second sentence to read "area".
 - p. 74 Fourth complete paragraph. First sentence should say "battery".
 - p. 77 First paragraph, first sentence. Same as previous correction.
- 6. Table 17 The total for the QC Samples needs to be recalculated. According to my calculations the number is 767 not 759. Since this changed, the total WCC Samples column will also change. The total there should be 5778.
- /. The radie of Contents does not match up with the document. In some cases it is only the outline number and page number that is wrong, in other cases it is the order that it is wrong. This needs to be corrected.

To: Gene Livi

From: Colleen Cleary, (Temp.)

Subject: Draft Final Quality Control Summary Report; NL/TARACORP; Superfund Site; Granite City, Illinois; WCC Project # 89MC114V; October 1992

Date: October 23, 1992

- 1. Table 9 The total QC Samples column for total lead should be 767 (according to my calculations) not 759. Since this total changed, so will the column labelled Total WCC Samples. It will change to 5778.
- 2. Table 2 and p. 28 There is confusion as to where the totals came from that are referred to on p. 28. All of the totals should be checked.
- 3. p.53 and p. 54 6.2.2 The first sentence of this paragraph is missing.
- 4. General spelling corrections:
 Table 11- Madison 1316 should read Gravel Lot
 p. 32 4.5.3.3 Second paragraph, third sentence. It is USACE-MRD
 laboratory

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COMMENTS ON DRAFT TREATABILITY STUDY OF REMOTE FILL AREAS NL/TARACORP SUPERFUND SITE GRANITE CITY, ILLINOIS

Reviewer: M. Roth

- 1. Page.4, Last Sentence. Have the lab determine what to do with these materials (solidify as is, shred and solidify, wash, place under cap as is, etc.)
- 2. Page 5. Second Sentence. Typo. "Allow" instead of "Allows."
- 3. Page 7. Add to Chemical Test List, "5.7 RCRA Total Metals."
- 4. Page 8. First Paragraph, Second Sentence. In order to cut down on the number of treatability tests, it may be in our best interest to do a complete mix design series on the worst case (most highly contaminated) fill. Then, confirmatory tests could be run on the fills from other locations, based on the determined optimum design mix.
- 5. Page 9. Second Paragraph, First Sentence. Typo. Should be "sections."
- 6. Page 9. Third Paragraph, First Sentence. Typo. Should be "set of."
- 7. Page 13. Cone Index. Typo. Should be "bearing."

Reviewer: G. Mellema

- 8. General. Please provide a sketch indicating locations of sampling sites. A sketch should also be required to be a part of the Work Plan Submittal.
- 9. Page 8. Third Paragraph, First Sentence. If possible, indicate here and on Table 1 what sample size (volume, weight) is required to complete the testing requirements. Sample size requirements should also be a part of the Work Plan Submittal.

Reviewer: S. George

- 10. Include provisions to collect more sample if results of the chemical testing indicate the waste is not hazardous.
- 11. Include provisions for further analysis on the selected few alternatives that work to determine the best ratio. These tests should not be performed on the most extreme ratios that are already known to be the maximum stabilized form. The additional, more stringent TCLP tests recommended should mimic conditions of a landfill and should be performed on the middle of the road mixtures.
- 12. Explain how oil and grease will be handled if it appears to be a problem. Since most of these areas are in a location where traffic or dust control suppressants may have contributed oil to the fill material, oil and grease as a possible interference should be considered.

NL/Taracorp Superfund Site Granite City, IL

- 1. The following are comments and questions on the Draft Final Report (October, 1992) prepared by Woodward-Clyde Consultants.
- (1) Page ES-4. How many additional samples are required from the BV&G property? Who will take them and when?
- (2) Page ES-4. Additional TCLP lead analysis is recommended. Who will do this and when?
- (3) Page ES-4. Will we order study of additional areas around the outer boundary of the study area?
- (4) Page ES-5. Will we do more sampling and testing in the area around 3108 Colgate Avenue?
- (5) Page 56, Para 4.1.1. Should the Trust 454 and Rich Oil properties be excavated to a uniform depth of six feet or should the depth vary according to the sampling results? If the depth varies, can a map be prepared which shows the various depths of excavation?
- (6) Page 60, Para 4.2. Is additional TCLP testing of residential area soils going to be done to determine if they will require stabilization?

Danny Klima CEMRO-ED-DJ (402) 221-4429



Engineering & sciences applied to the earth & its environment

89MC114V March 3, 1993

Mr. Eugene Liu
U.S. Department of the Army
Corps of Engineers, Omaha District
215 North 17th Street
Omaha, NE 68102-4978

Subject:

Comments from Mr. Danny Klima of USACE on Draft Final Report

for NL/Taracorp PDFI

Dear Mr. Liu,

As we briefly discussed on February 16,1993, during the three way conference call between USACE, USEPA, and WCC, we do not feel that we are in a position to address the comments on the draft report made by Mr. Danny Klima.

Mr. Klima raises some issues that need to be resolved as the project moves to the remediation phase. However, we believe that it would be more appropriate that these issues be addressed by the USEPA. For Questions 1, 2, 3, 4 and 6 (see attached), we feel that we can point out the need for additional sampling and testing, but the scope of the additional work needs to be decided by the USACE and/or the USEPA. There would be a considerable amount of time and effort involved in quantifying the number of additional samples and analyses required, which we feel is beyond our current scope of work.

With Regard to question 5, additional sampling would be required to generate an accurate map deliniating the excavation depth across the site. In light of USEPA's suggestion that the Main Industrial Property be excavated to a uniform depth of 2 feet, followed by a round of confirmation sampling, such a map becomes a moot point.



Woodward-Clyde Consultants

If you feel that additional discussion of these specific issues is needed prior to finalizing the report, please let us know. We will be available for a conference call to discuss treatment of any of the issues raises by Mr. Klima.

Very truly yours,

David L. Pate

Project Geologist

Kenneth A. Hagg

Associate

attachment (1)